Water

2014 Operating and Capital Budgets

and

Forecasts

London
CANADA

Approved

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Water
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RECOMMENDATIONS

That, on the recommendation of the Managing Director, Environmental and Engineering Services and City Engineer, the following actions be taken with respect to the 2014 Operating Budget, 2014 Capital Budget and associated forecasts for Water Services:

(a) the 2014 Operating Budget for Water Services **BE APPROVED** as submitted;

(b) the 2015 - 2018 Operating Forecast for Water Services **BE RECEIVED** for information;

(c) the 2014 Capital Budget for Water Services **BE APPROVED** as submitted;

(d) the 2015 - 2023 Capital Forecast for Water Services **BE RECEIVED** for information;

(e) all rates and charges related to the provision of Water Services **BE INCREASED** by 8%, effective January 1, 2014; and

(f) the proposed by-law to amend the Water Rates and Charges By-law **BE INTRODUCED** at the Municipal Council meeting on December 3, 2013 to effect the rates and charges noted in (e), above.

Bill No. 19
2014

By-law No. W-8-14001

A by-law to amend By-law W-8 entitled, "Regulation of Water Supply in the City of London."

The Municipal Council of The Corporation of the City of London enacts as follows:

1. Section 1 of Schedule A of By-law W-8 is amended by deleting the existing table and replacing it with a new table as follows:

Range within Block (m^3)	**Monthly Water Consumption (m^3)**	**Rate ($/m^3$)**
0 - 7	First 7	-
8 - 15	Next 8	$1.8688
16 -25	Next 10	$2.4028
26 - 35	Next 10	$2.6698
36 - 250	Next 215	$1.0146
251 - 7,000	Next 6750	$0.9611
7,001 - 50,000	Next 43,000	$0.8758
50,001+	Over 50,000	$0.7797

2. Section 2.1 of Schedule A of By-law W-8 is amended by deleting the existing table and replacing it with a new table as follows:

Meter Size (mm)	Monthly Charge ($)
16	$13.12
19	$19.68
25	$32.80
40	$65.61
50	$104.98
76	$229.62
100	$393.64
150	$918.50
200	$1,574.55
250	$1,968.30

3. Section 2.2 of Schedule A of By-law W-8 is amended by deleting the existing table and replacing it with a new table as follows:

Property Classification	Monthly Charge ($)
Residential and Low-density Residential	$1.35
Institutional, Commercial, Industrial, Medium-density Residential, High Rise under 5.0 hectares	$9.00
Institutional, Commercial, Industrial, Medium-density Residential, High Rise 5.0 hectares and over	$45.00

4. Section 3.1 of Schedule A of By-law W-8 is amended by deleting the existing table and replacing it with a new table as follows:

Building Type	Charge ($)
Single Family	$48.60
Duplex	$48.60
Up to 4 Units	$60.73
5 to 10 Units	$91.05
11 to 15 Units	$121.42
16 to 20 Units	$151.83
21 to 25 Units	$182.79
26 to 30 Units	$212.48
31 to 35 Units	$242.97
36 to 40 Units	$273.33
41 to 50 Units	$303.65
Over 50 Units	$6.15 per unit
Other Buildings	$12.36 per 93 m^2 of floor space (min charge $30.89)

5. Section 3.2 of Schedule A of By-law W-8 is amended by deleting the existing table and inserting new table as follows:

Type of Main Tap	Charge ($)
Tap size 50 mm or less	$291.60
Tap size greater than 50 mm	$583.20
Tapping concrete Mains or tap size of greater than 300 mm	$1,749.60

6. Section 3.3 of Schedule A of By-law W-8 is amended by deleting the existing table and inserting new table as follows:

Service or Activity	Charge
Change of occupancy/ Account set-up/ Security deposit	As set by London Hydro
Late payment	As set by London Hydro
NSF cheques	As set by London Hydro
Collection charges	As set by London Hydro
Bulk Water User charges Smart Card (per card purchase cost) Cost of Water per 1,000 litres	 $37.79 $3.12
Inspecting Waterworks installations/disconnections	$104.70 per hour
Disconnection of Water Service During regular hours After regular hours	 $35.00 $185.00
Arrears Certificate charges (non-payment/arrears)	$50 per property
Disconnect and Reconnect Meter at customer request 16 and 19 mm 25 mm and larger	 $172.67 $293.90
Install Water Meter and Remote Read-Out Unit at customer request	$264.54
Repair damaged Water Meter 16 and 19 mm 25 mm and larger	 $181.85 Time and Material

Meter checked for accuracy at customer's request and found to be accurate 16 and 19 mm 25 mm and larger	 $135.92 $183.68
Builder and Developer Frontage Charges: (based on actual frontage which directly abuts City right-of-way) Residential (maximum 50 metres) Commercial, Institutional and Industrial	 $189.83 per metre $201.90 per metre
Illegal Hydrant Connection	$540.00/offence + water consumption
Temporary Hydrant Connection Hydrant connection/disconnection Hydrant occupancy Water consumption Minimum charge (up to 300 m^3) All additional m^3	 $199.80 $37.80/week $864 $2.89/$m^3$

7. This by-law comes into force and effect on January 1, 2014.

PASSED in Open Council December 3, 2013

Joe Fontana
Mayor

Catharine Saunders
City Clerk

First Reading – December 3, 2013
Second Reading – December 3, 2013
Third Reading – December 3, 2013

Water
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EXECUTIVE SUMMARY

The approved 2014 Water operating and capital budgets will continue to ensure the provision of safe and reliable water supply for this and future generations of Londoners. Administration has prepared the 2014 operating and capital budget based on the financial plan endorsed by Council during the development of the 2013 budget. This will result in an 8% rate increase in 2014, with financial sustainability[1] projected in 2016.

The average cost to the homeowner for 2014 will increase by $27 per year (based on projected 2013 consumption of 181.2 m^3). At the approved rates for 2014, the homeowner's cost for the year will be $363 or $0.99 per day.

The operating and capital works plans represent a balanced approach to the installation of new infrastructure in conjunction with the Growth Management Implementation Strategy and the investment and renewal required to sustain existing infrastructure. Reliable infrastructure and performance of the water system are key elements to economic development as well as quality-of-life and safety (fire protection and sanitation) in the community. In 2014, efforts will continue to protect water quality and improve reliability by investing in renewal of the water supply system including pipes, pumps and water meters.

Increasingly stringent standards, regulations and legislative obligations continue to require major investments in terms of staff time and financial resources. Staying abreast of regulatory developments and providing early commentary and views, although not always successful, remains a key tactic in helping to shape the broader direction and control long term costs (e.g. Source Water Protection, corrosion control plans, intra-basin water transfers and water conservation). Utilities are continually faced with the renewal needs of an aging infrastructure and high rates of inflation, particularly for construction. Rethinking past practices and investing in new approaches, while ensuring the reliability of the service, have become fundamental to the daily delivery of clean water.

[1] Financial Sustainability is defined as the movement toward annual rate increases that can be maintained at or near the annual rate of inflation based on a combination of CPI and the Construction Price Index with appropriate use of debt financing, adequate reserve funds and the appropriate investment in capital.

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Financial Overview

The approved 2014 Water budget presents a balanced cost/revenue plan in the amount of $69.6 million. This represents an increase of 11.3% reflecting the impact of the rate structure implemented in 2013 on the 2014 approved budget.

The approved operations portion of the budget totalling $41.3 million represents a 0.7% increase over 2013. Although the cost of purchasing water from the Elgin Area and Lake Huron Primary Water Supply Systems is anticipated to increase by 9% and 5% respectively, these higher costs are offset by savings on customer services costs, which are forecasted to be lower than 2013 budgeted amounts. The approved 2014 budget also includes additional resources to address regulatory and compliance requirements.

Administration continues to strive to eliminate waste, improve efficiencies, and utilize new technology in an effort to minimize operational costs and this is reflected in the 0.7% increase forecasted for 2014, despite wage increases in accordance with existing labour agreements and the additional regulatory pressures that are anticipated.

No additional future rate supported debt is anticipated. Debt servicing costs are projected to increase from $283 thousand to $364 thousand and rate supported capital funding has been increased by $3.2 million to $16.9 million. The Water Service Area continues to focus on building its reserves in accordance with the 20 Year Water System Plan. The new water rate structure, combined with the forecasted future rate increases, will enable reserve funds to be maintained at a more optimal level, recognizing that higher than average drawdowns are forecasted in the 2021 to 2023 timeframe to support the approved capital plan. Refer to pages 60-62 for the reserve funds used by the Water Service Area.

Water
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Exhibit 1

Explanation of Changes in Expenditures	Change ($000's)
Increase in the wholesale cost of purchasing water from the Elgin Area and Lake Huron Primary Water Supply Systems. Rates are anticipated to increase by 9% and 5% respectively. This increase is partially offset by a reduction in the volume of water purchased.	270
Decrease in billing and customer service costs, driven by a reduction in the amount budgeted for billing services provided by London Hydro as a result of the Service Agreement negotiated in 2013. This is partially offset by an increase in Customer Assistance expenditures.	(270)
Increase of $273 thousand in personnel costs due to an additional Engineer and Technologist to support necessary risk reduction initiatives in Water Engineering, as well as a Waterworks Compliance Coordinator to support operational initiatives related to compliance with the Safe Drinking Water Act. This is offset by wage, salary & benefits adjustments in accordance with existing employment agreements.	10
Increases in equipment & rentals, purchased services (driven by insurance, utility locate and Source Water Protection costs) and administrative expenses, partially offset by a decrease in materials & supplies. Note that the increase in administrative expenses was minimal due to a $157 thousand transfer of an additional share of other administrative costs from Water to Wastewater and Treatment to move to full cost accounting for the utilities.	289
Operating Related	**299**
Increased contributions to reserve funds to reflect capital requirements outlined in the 20 Year Water System Plan and the objective of maintaining sufficient reserve fund balances to support an estimated asset base of $2 billion.	3,445
Increase in capital levy required to achieve target of 75% of 2014 life cycle projects funded on a pay-as-you-go basis, consistent with the Financial Plan.	3,255
Increased debt servicing costs resulting from debt issued for prior years approved capital projects.	81
Capital Related	**6,781**
Total Change in Expenditures	**7,080**

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Economic Conditions and Future Uncertainty

Despite the lingering effects of the 2008 recession, volatile financial markets and debt crises in several jurisdictions, the Water utility continues to implement its financial strategy to achieve financial sustainability by 2016. The capital programs administered by the Water utility also have the benefit of providing economic stimulus to the City in these challenging times.

A new "Value of Water" funding model was implemented in 2013 to achieve financial sustainability, promote conservation and encourage economic development and job retention. Implementation of the new water rate structure addresses the inconsistencies and inequities of the previous rate structure, while also promoting conservation efforts and economic development initiatives. The new rate structure has also enabled financial sustainability at inflationary levels to be projected two years earlier than previously forecasted. This will result in lower future rate increases and ultimately lead to lower costs for ratepayers.

While the new funding model shifts a greater proportion of revenues to fixed charges, the utility remains susceptible to future consumption declines. Any future declines in excess of those that are forecasted may result in adjustments to the sources of financing for the operating and capital plans.

The Water Service Area has not previously had any significant debt with the exception of the portion of the Regional Water debt that is attributable to the City (debt payments tied to the City's share of the Regional Water debt are made indirectly as the part of the purchase of water rate charged to the City by Regional Water). During the federal and provincial stimulus programs, the Water system did take on debt to participate along with roads and sewers to construct projects which were not in our 20 year plan. Advancing these projects was of significant benefit in leveraging rate supported funds for General Tax and Wastewater and Treatment. Borrowing for capital works may be required in the future to stabilize the Water Reserve Funds but will be done in a conservative and fiscally responsible manner.

There is no current federal/provincial infrastructure funding program that the Water Service Area can access with the exception of Gas Tax allocation (refer to page 43). While staff will continue to investigate possible funding programs, it is unlikely with the current senior government deficit positions that significant new and sustainable programs will emerge in the immediate future.

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The financial model and 20 Year Water System Plan is based on specific assumptions. If these assumptions change, then the sustainability of the water supply system could be affected positively or negatively. Factors in the model which could impact revenues or expenditures are identified below:

a. Water consumption – revenues are directly tied to the amount of water the City sells to its customers. Declining consumption is forecasted in the model (due to conservation or reduced industrial production) even though the number of customers and businesses are forecasted to increase. Consumption was decreased for the 2014 budget based on recent trends, best practices in forecasting and anticipated reductions resulting from more efficient fixtures. In past years the actual decline in consumption has significantly exceeded assumptions in the model and as a result the projected consumption has been adjusted accordingly for 2014. Declining consumption is also being considered in future growth needs through a reduction in design criteria in the Master Plan/Development Charges Background Study update (in progress);
b. Wholesale water costs – increases in the cost of water purchased from the Joint Boards have been based on the most recent Regional Water System financial plans. The financial plans have been updated to address higher capital costs associated with the Residue Management Facilities, electricity costs and increases in contract operations for the Elgin Area System;
c. Consumer price index and construction cost index – construction, administration and operational costs are assumed to escalate at a blended rate of 3% in the model. Higher construction cost escalation might require that annual rate increases need to be higher than 3% to ensure sustainability since the buying power of the dollar is reduced. Conversely, if inflationary pressures are minimal, rate increases of less than 3% may be sufficient;
d. Non-revenue water (NRW) – in the middle of the last decade NRW was at 7.5% to 8%, whereas now we are experiencing around 11% (still below the Provincial average). The model assumes a reduction in NRW to 10% in 5 years based on investing in enhanced leak reduction efforts and meter replacement strategy. Not achieving this reduction may delay financial sustainability or require greater rate increases;
e. New revenue sources – the addition of new revenue sources would have a beneficial impact on achieving and maintaining financial sustainability; and
f. Introduction of innovative, cost-effective technologies which may extend the life of existing infrastructure beyond current assumptions.

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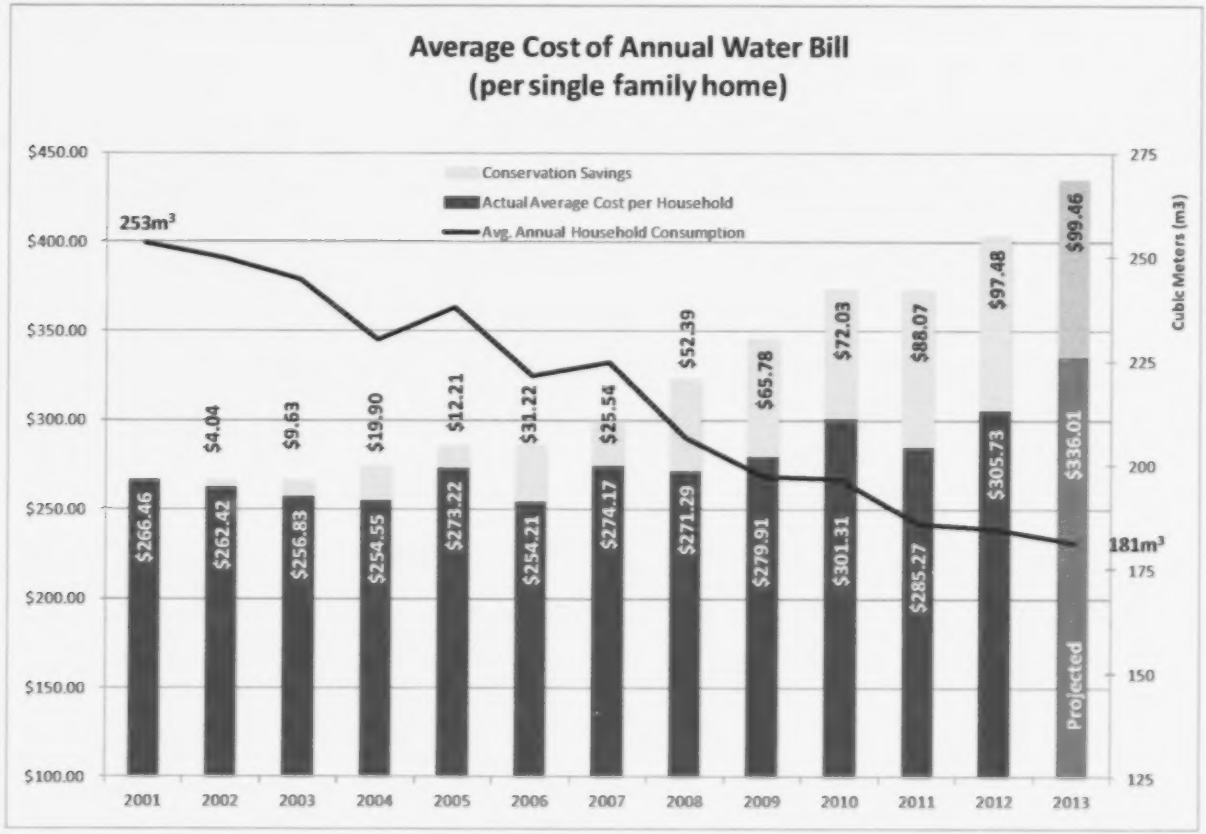
Water Consumption and Conservation

Average household water usage in London has declined by 28% from 2001 to 2013 (Exhibit 2).

Exhibit 2



There are a number of influencing factors responsible for this conservation trend and although the impact to revenues is negative the overall impacts of water consumption declines should be seen as a very positive trend and should be encouraged. It leads to lower operating costs where they relate directly to the volume of water consumed, and reduced capital costs through deferral and lower design criteria.

It is anticipated that the final billed volume for 2013 will fall short of budget. 2014 projections have been updated to reflect a greater-than-anticipated reduction in consumption. The 2013 budget was based on volume of 43.2 million cubic metres (Mm^3) which is being further reduced to 41.0 Mm^3 for the approved 2014 budget. This represents a consumption and conservation reduction of 5.1% which has been absorbed into the revenue projections for 2014. As noted previously, the new water rate structure helps to offset this decline in consumption by shifting a greater portion of revenues to fixed charges, but the utility remains heavily dependent on water consumption volumes.

Rate Increases Needed to Sustain the Water Utility

Administration is recommending an 8% rate increase in 2014, 7% in 2015, and a return to the rate of inflation thereafter (the long-term rate forecast is detailed in Exhibit 3). This would enable the Water Service Area to reach financial sustainability by 2016 which is 2 years earlier than previously anticipated. The projected rate increases are based on an anticipated net consumption reduction of 1% (assuming a 1% growth factor and an average consumption reduction of 2%) until 2021 and an anticipated net consumption reduction of 0% (assuming a 1% growth factor and an average consumption reduction of 1%) thereafter.

It should be noted that projections are based on best available information at this time. Changes in the economic climate, legislative requirements, and water consumption trends are monitored and evaluated annually to ensure sustainability is secured for the future.

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Exhibit 3

Long-Term Rate Forecast		
Year	**Rate Increase Required**	**Net Consumption Impact**
2014	8%	-1%
2015	7%	-1%
2016	3%	-1%

Core Service Delivery – Infrastructure Renewal, Economic Development and Growth, and Resource Protection

The Water Service Area remains proactive in initiatives to ensure that this service continues to meet the demands and expectations of customers. Existing infrastructure requires significant renewal (replacement and rehabilitation) work to close the infrastructure gap ensuring that future generations and businesses are not faced with a water system that is failing, unreliable and expensive to maintain. There is also an environmental duty to ensure that water consumption is not wasteful. Further initiatives related to water awareness and the efficient use of water have been budgeted and programs are currently ongoing. The water utility has maintained a relatively good financial picture and continues to place London in the position of having an adequate and secure supply of high quality water at a competitive cost.

Exhibit 4

2014 Water Capital Plan Summary		
Category of Project	**Total ($000's)**	**Percentage**
Life Cycle Renewal	22,475	81%
Growth	4,587	17%
Service Improvement	630	2%
Total	**27,692**	**100%**

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Water Distribution System Renewal

Two capital programs are at the centre of renewal, with a focus on managing the infrastructure gap to a sustainable level.

1. The Main Rehabilitation Program targets areas of the City where water quality (taste, colour, chlorine residual) has deteriorated due to prolonged water detention time and internal corrosion of the watermain (identification is driven, in part, by water quality complaints). Cleaning and relining restores water quality and improves fire flow, while extending the life of a watermain that would otherwise have to be replaced at a much higher cost and also reduces social impacts and disruption by utilizing trenchless technologies. In recent years, this program has focused more on structural relining versus cement mortar relining.
2. The Watermain Replacement Program ensures that the distribution system remains reliable and cost effective. This program is coordinated with sewers and roads and has been realigned to meet Council's direction on sustainability, by shifting some funds to structural relining.

Some anticipated benefits of continuing these capital programs are a reduction in water quality complaints, extended service life of watermains (before replacement is required), reduction in the number of watermain breaks, reduction in water losses, reduction in water used for flushing, reduction in average age of system and a reduction in the risk of private property damage and disruptions to the travelling public.

Meter Replacement Strategy

Water Operations will continue with its water meter replacement program and meter reading strategy, concurrent with London Hydro's compliance with government legislation requiring implementation of "smart metering" for electric customers. London Hydro implemented a new customer service software system (SAP) to manage the new meter read data in 2009. The new system has meter management capabilities and will be interlinked with meter replacement and the City's meter work order system. The Water Meter Shop is also using new software to improve water meter change-out scheduling and customer interactions supporting the interactive telephone voice recording system and web-based appointment scheduling system.

Many existing meters are beyond their optimum replacement age and are in a deteriorating condition, thereby being a source of unaccounted water and revenue loss for both Water and Wastewater revenue streams. The replacement meters incorporate state-of-the-art technology, fully compatible with the automated meter reading system. Reducing the backlog of old meters scheduled for replacement continues through a long-term meter change-out program over a 10 year period. This approach will minimize spikes in the future replacement program as compared to a 1 or 2 year change-out period, ensuring sustainability of this key meter asset. New meter reading technology is being used to reduce the cost of meter reading and will continue to be explored in striving to reduce the effort associated with meter reading.

Risk Reduction Initiatives related to Health and Safety, Financial, Security of Supply, Environmental and Private Property

Municipal Councillors and officials have oversight responsibilities under Section 19 of the Safe Drinking Water Act, which became a statutory requirement on January 1, 2013. Severe penalties are possible for municipal officials who fail to act in good faith and do not exercise honesty, competence and integrity to ensure the protection and safety of the users of municipal drinking water systems. A statutory standard of care is required on the part of our elected officials to prevent waterborne disease outbreaks.

Considerable effort has been undertaken in the Water Service Area to assess risk and put in place management strategies to reduce risk and minimize the impact on our customers. Several initiatives are identified for 2014, while others are a continuation and/or expansion of work already underway. Some of the initiatives undertaken by the City reduce risk in multiple areas.

Drinking Water Quality Management System (DWQMS)

The Drinking Water Quality Management System (DWQMS) mandated by the province assists the utility in ensuring a consistent delivery of high quality drinking water by all staff. With the City's full accreditation as a Licenced Operating Authority, based on the completion of an external audit in June 2013, considerable additional effort will be necessary to fulfill the requirements of the DWQMS. A full-time Compliance Coordinator position is proposed in the 2014 budget to:

- ✓ Monitor and review operations of the drinking water system to ensure compliance with legislation, the Operational Plan and conformance with Standard Operation Procedures and best practices;

- ✓ Coordinate and conduct internal audits of the DWQMS;
- ✓ Ensure continual improvement action items are addressed and implemented; and
- ✓ Provide reports to Senior Management and Council, consistent with the Standard of Care.

This new position will ensure that the risk of contamination is minimized by undertaking the methodical quality management process. The associated monitoring and auditing improves staff understanding of their roles and responsibilities and the fully documented process ultimately improves knowledge retention as key employees leave. Such a position is being used successfully by the Lake Huron and Elgin Area Primary Water Supply Systems.

Fire Hydrant Colour Coding

This initiative is driven by an Order from the Fire Department due to non-compliance with the Fire Code. Fire hydrants are to be colour coded according to the amount of flow they can deliver at 138 kPa (20 psi). Administration will utilize the calibrated Water hydraulic model to provide flow ranges for every hydrant in the City (over 8,500). Based on this analysis, colour coded plastic discs will be purchased and installed on the nozzles of City-owned hydrants by Water staff. Each hydrant will subsequently be tested once every 10 years. In addition to satisfying the compliance order, this program will provide visual recognition for the Fire Department to identify which hydrants will deliver more water as required, while also providing an opportunity for Water staff to identify and then replace low flow hydrants or watermains.

Air & Vacuum (A&V) Valves Maintenance

This initiative is in response to an Order from the Ministry of the Environment to address a non-compliance with Safe Drinking Water Act (SDWA). A&V valves located in chambers which flood may be sources of contamination of the drinking water supply. Staff are in the process of surveying/inspecting all 244 A&V valve chambers to determine those which chronically flood, develop a maintenance program and related standard operating procedures, undertake transient hydraulic modelling to determine which chambers are required for transient protection and which are of limited value, and remove or replace A&V valves as required to comply with the maintenance program and SDWA. This program will ensure that the risk of contamination is reduced, while transient analysis will provide a better understanding of the distribution system's operation, other contamination potential and damage that may result from transient pressure waves.

Shut-off Valves Maintenance

This program aims to enhance the level of maintenance on shut-off valves, which will provide quicker response to repair leaks or breaks on watermains and services, and minimize the number of out-of-service customers. Best practices dictate that each valve in the distribution system (approximately 11,000) should be exercised once per year, with full closure at least once every 3 years. The benefits of completing this maintenance according to best practices include: reducing the amount of time that customers are without service, reducing water loss, reducing staff time (including overtime) to repair breaks and leaks, and ensuring that all valves are open to provide the necessary fire flows in the event of an emergency.

Source Water Protection Plan Implementation

Source Water Protection is a new legislative requirement under the Clean Water Act and impacts the City in relation to well-head protection areas. The activities planned for 2014 include implementation of the City's Source Water Protection Plan as it relates to the Risk Management Officer and Risk Management Inspectors' liaison with private property owners within the well-head protection areas. These activities will fulfill the City's legislated requirement. Failure to exert control may result in aquifer contamination and risk to public health if wells are used. It is proposed that these legislative requirements be fulfilled with contracted services while staff reviews the merits of decommissioning the remaining wells following the completion of the Southeast Reservoir and Pumping Station.

Leak Detection within the Distribution System and Reduction of Non-Revenue Water

A significant aspect of managing our financial risk is to reduce the amount of water which is delivered to the City, but not charged for. This unaccounted for water is termed "non-revenue" water. While London has an enviable ratio of billed water to purchased water (89%), the amount of non-revenue water has increased in recent years and there are several opportunities to improve the efficiency of the system in terms of leak reduction, billing meter accuracy, reducing breaks and early response to breaks, and improved water quality to minimize flushing requirements. Two pilot projects were initiated in 2012 as part of the Water Efficiency Program to identify currently undetected water leakage in the distribution system. The two pilot programs utilize "acoustic listening devices" and "real water consumption data analysis" in isolated parts of the water distribution system.

The next phase of this initiative involves the implementation of additional District Metering Areas (DMA's). The City distribution system can be divided into zones (50+) where pressure and flow is monitored to determine if there are leaks. Best practice indicates that considerable savings can result with the installation of properly designed DMA's throughout the City. These savings in lost water will support ongoing operational costs of the program and pay back the initial capital costs incurred. This program also reduces the number of watermain breaks, property damage and customer inconvenience, while minimizing staff time (including overtime) to repair future breaks. An opportunity also exists to utilize DMA's in new subdivisions to provide a mechanism to charge for construction water usage.

Hydraulic and Water Quality Modeling

Further modeling will be undertaken to assess the impact of operational changes on water quality and water pressure in the distribution system to ensure safety of supply, adequate fire protection and minimize supply interruption impacts on customers. Modeling efforts will also be undertaken to address energy efficiency with the objective of reducing operational costs. Transient pressure modeling will identify potentially damaging pressure surges in the distribution system and once corrected will extend the service life of pipes in the distribution system and reduce breaks. Additional resources are also required to support operations, meet the requirements of Orders noted previously, and manage future cost increases.

Operational Efficiency Initiatives

The Water Service Area continues to seek out and implement new technologies bringing innovative approaches to infrastructure renewal. Below are some of the new and continuing initiatives that have been included within the proposed budget.

Computer Maintenance Management System (CMMS)

Water Operations is working towards electronic maintenance and asset management (EW3527 - Asset Maintenance Management System), in conjunction with the Asset Management Division. The computerized work order system will better schedule the work of Operations staff to achieve greater efficiencies, track expenditures against assets and develop readily retrievable electronic records for each water asset. Planning began in 2011 and it is expected that implementation will begin in 2013, with the system becoming operational in 2014.

Trenchless Technologies - Reducing Trenching and Restoration

Trenchless technologies have been used by the Water Service Area since the mid 1990's, all the while reviewing, assessing, and implementing emerging innovative technologies and materials. Compared to open cut and surface restoration construction, trenchless methods minimize the amount of excavation required to install watermains, minimize damage to surface structures, cause less traffic disruption and reduce noise and dust for homeowners. This technology also allows installations to be made in areas where open excavation is impractical, impossible, extremely difficult, or costly. Trenchless procedures are also more environmentally friendly because they produce less construction emissions.

Success in trenchless watermain rehabilitation projects warrants increased use of this technology. Water Operations has completed many watermain replacement projects and lead service replacements using its directional drill equipment. Successes have also been realized by continued use of its hydro-excavation equipment, which significantly decreases the amount of excavation and restoration required to undertake maintenance and repairs to watermains and water services, while safely working around hazardous utilities (electric and natural gas).

Practical research is underway to assess innovative technologies in the area of structural lining of cast iron watermains. With increasing contractor competition in this area, the cost to rehabilitate watermains is expected to decrease somewhat, allowing more watermains to be renewed through projects such as EW3563-14 – Main Rehabilitation, further narrowing the infrastructure gap.

Elgin Middlesex Pumping Station and the Southeast Reservoir and Pumping Station (SERPS) Operations

The previously approved Water Capital budget had included a project for replacement of London's pumps and ancillary equipment in the Elgin-Middlesex Pumping Station, providing supply to SERPS. Significant cost savings are expected through energy efficiency gains by the pump replacement initiative coupled with Southeast Pumping Station becoming operational, and further enhanced by more equitable operating contract terms.

Cost Summary for New Initiatives Outlined:

Additional costs associated with aforementioned compliance, regulatory and efficiency initiatives have been included in the approved 2014 budget. These additional costs include:

Expenditure Type:	Estimated Cost for New Initiatives:
Personnel and associated costs	$273,000
Purchased services	$50,000
Capital expenditures	$500,000 per year for 2014-2018

Additionally, cost savings in the amount of $190,000 are projected for 2014, with an incremental $190,000 per year of savings forecasted for 2015 through 2018. More detailed information can be found in Appendix A.

Legislation with a Potential Impact on Future Cost of Operations

The City of London has responded to the Environmental Bill of Rights Registry posting dealing with the proposal paper on Stewardship, Leadership, Accountability – Safeguarding and Sustaining Ontario's Water Resources for Future Generations. The main concern for London revolves around the point of whether London is undertaking a transfer of water across a Great Lake basin boundary. Staff at the City of London and Regional Water Supply Systems are fully engaged with the appropriate Ministries to ensure the best interests of the City of London and other regionally supported municipalities are considered. Draft regulations were expected in 2012, but still have not been received. The long term cost impacts as a result of these regulations are not entirely known at this time.

The Water Opportunities Act introduced mandatory legislation which was anticipated in the development of our Water Efficiency Program and Municipal Drinking Water Awareness Plan. Other key elements of the Act incorporated within a "municipal water sustainability plan" include an asset management plan and associated maintenance management system, a financial plan and a risk assessment. These initiatives are either complete or well underway, thereby putting the City in a good position to meet the requirements of the legislation and the subsequent enabling regulations. Any further impacts on staff resources and financial commitments will not be clear until the regulations of the Water Opportunities Act are put forward, but it is clear that more effort will be required than was previously budgeted.

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Conclusion

The approved 2014 Water Service Area operating budget presents a balanced investment/revenue plan in the amount of $69.6 million. Operating expenditures continue to be minimized in an effort to maximize capital funding so that the infrastructure gap is managed to a sustainable level. Additional revenues are being funnelled into reserve funds to aid in achieving financial sustainability by 2016.

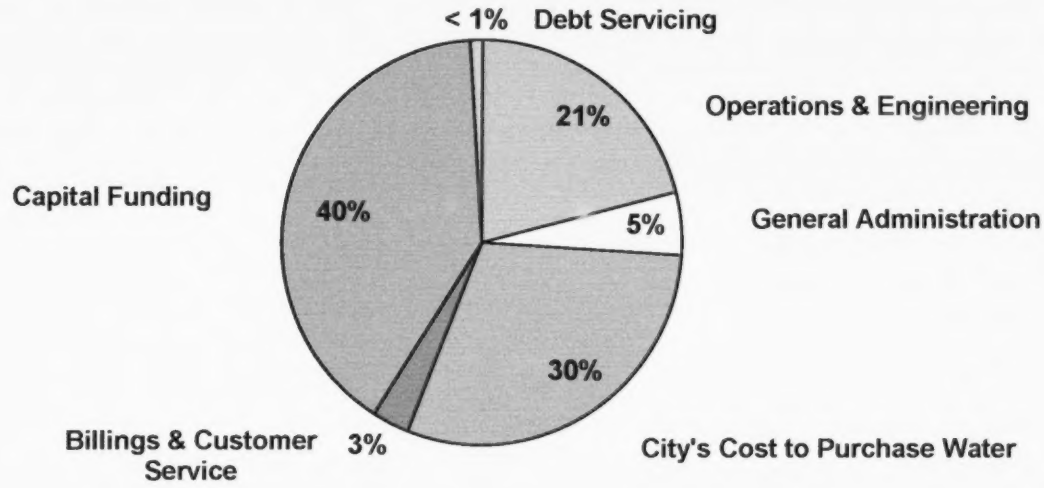
At a daily cost of $0.99, (based on projected 2013 consumption of 181.2 m^3) a London household has access to a reliable, high quality abundance of water to satisfy all their water needs (drinking, food preparation, sanitation, showers, laundry, dishwashing, outdoor water use, etc.). Public health, fire protection, economic development and convenience are further benefits realized through the provision of this essential service.

The legislated Water Service Area Financial Plan was resubmitted to the Ministry of Municipal Affairs and Housing on June 14, 2011. The financial plan for the City's water supply system confirms our commitment to full cost recovery, financial stability, closing the water infrastructure gap, while achieving sustainability of the system in the years to come. The financial plan identifies the funding requirements to ensure a safe and sufficient water supply, while meeting all regulatory compliance requirements. Changes in 2013 and those approved for 2014 do not require that the plan be resubmitted.

The plan is a commitment to continue renewing infrastructure as it approaches the end of its useful life, prior to failure, thereby minimizing maintenance and repair costs, social disruption and water loss and ensuring intergenerational equity.

Water

Your Water Dollar is Spent in Several Areas



Budgeted Residential Cost at 2013 Rates [1]	Forecasted Residential Cost at 2013 Rates [2]	Approved Increase (8%)	Forecasted Residential Cost at 2014 Rates [3]
$336	$336	$27	$363

(1) The budgeted residential cost in 2013 was based on an average residential consumption of 188.1 m^3.

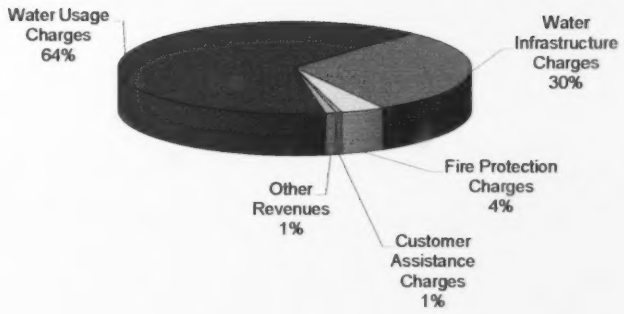
(2) The forecasted residential cost in 2013 has been restated using the new water rate structure effective March 1, 2013 and based on a revised consumption estimate of 181.2 m^3. The amount shown for comparison reflects a full year of the new rate structure for simplicity.

(3) The forecasted residential cost in 2014 is based on an average residential consumption of 181.2 m^3.

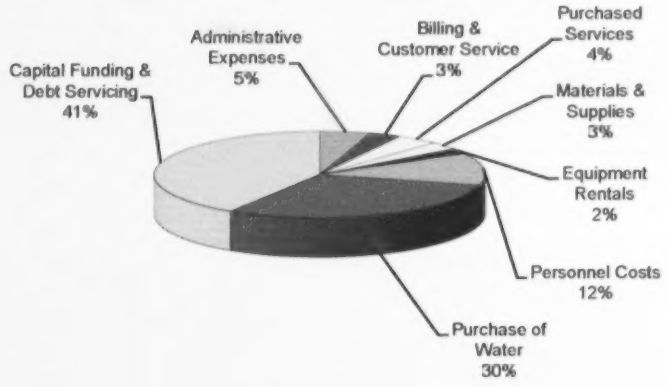
Water
2014 Budget Highlights
($000's)

	($000's)	%
2014 Approved Budget	$69,644	
2013 Approved Budget (excluding impact of new rate structure)	$62,564	
Increase Over 2013 Budget	**$7,080**	**11.3%**
Impact of New Rate Structure offset by Lower than Anticipated Consumption, etc.		**-3.3%**
Total Rate Increase		**8.0%**

Revenue Budget
$69,644



Expenditure Budget
$69,644



BUSINESS PLAN: Drinking Water Supply

How does this service contribute to the results identified in the City of London Strategic Plan?

✓ **A strong economy**	**A vibrant and diverse community**	✓ **A green and growing City**	✓ **A sustainable infrastructure**	✓ **A caring community**

Comply with all regulatory requirements to operate, sustain, expand, and improve the waterworks infrastructure for efficiently delivering high quality and reliable water supply to London's customers for all drinking, recreational, irrigation, sanitary, fire protection, and institutional/commercial/industrial needs, while also providing education and encouraging water conservation.

Name the main activities done to provide this service:

Name The Activities Done To Provide This Service	How Much Did We Do? (optional)	Is The City Mandated To Provide This Service?	Can The Level Of Service Be Changed?
Water Quality Sampling and Reporting	Approx. 12,000 tests per year plus continuous on-line testing	Yes	No
Operation, Maintenance and Repair of the System	Approx. 42.0M m^3 of water sold per year	Yes	Yes (with limitations)
Renewal of Existing Infrastructure	Approx. 20 km of existing watermains replaced or rehabilitated per year	Yes	Yes (with limitations)
Extension of Services for Growth	Approx. 12 km of new watermains installed per year	Yes	Yes (with limitations)
Water Meter Program (New & Replacement)	Approx. 12,000 meters installed per year	Yes	Yes (with limitations)
Water Billing Services through London Hydro	Approx. 1.2M bills per year	Yes	Yes
Water Efficiency and Conservation Education and Outreach	Approx. 110,000 customers contacted to provide water saving tips	Yes	Yes (with limitations)

What is the current state of this service?

- Current objectives of the Water utility include:
  - Working towards achieving a financially sustainable[1] utility and addressing lifecycle renewal, growth and economic development objectives of the City while ensuring regulatory compliance
  - Maintaining / improving the existing level of service provided to the citizens and businesses of London
  - Improving on lost water revenue (non-revenue water)
  - Reducing the number of lead service connections
  - Providing support for the City's Industrial Land Development Strategy
- These objectives are being driven by a number of factors, including:
  - Customer expectations of the services that should be provided
  - Council-approved level of service requirements
  - Council-endorsed strategic initiatives
  - City of London Strategic Plan
- A number of challenges are facing the Water service area in the achievement of these objectives:
  - Declining revenue base, aging infrastructure (much of which is reaching the end of its useful life at the same time), increasing cost drivers over which the utility has no direct control (power, labour, etc.), an aging workforce, and ever-increasing regulatory requirements
  - Increasing customer expectations for improved service levels commensurate with the rising cost of the service
  - Specific compliance issues drawing attention and effort away from overall compliance management
- Some of the challenges noted above have been managed with positive results in 2013 through the following achievements:
  - Implemented a new funding model which covers a portion of the system renewal cost
  - Considerable staff training on the need for and mechanics of the new funding model
  - City-wide communication and education campaign, addressing the rationale for the new funding model and how customers can save on their water bill
  - Revised revenue and expenditure forecasts
  - Preparation of the City's Water Growth Master Plan and input to the Industrial Land Development Strategy and new Development Charges study

[1] Financial Sustainability is defined as the movement toward annual rate increases that can be maintained at or near the annual rate of inflation based on a combination of CPI and the Construction Price Index with appropriate use of debt financing, adequate reserve funds and the appropriate investment in capital.

- Re-accreditation of the City's Water Operating Authority license under the Drinking Water Quality Management Standard, and increased vigilance with respect to compliance under the Safe Drinking Water Act and the Fire Code
- Advanced a program for eliminating and/or substantively reducing the risk of drinking water contamination in all flooded air and vacuum valve chambers within the distribution system
- Advanced the program for replacement of lead services
- Initiated implementation of a Computerized Maintenance Management System, to bring the utility's maintenance and work flow management up to industry standards. This will result in staff resource efficiencies, enhanced documentation, and cost tracking of maintenance activities, while also ensuring compliance with regulatory requirements

What is the future direction of this service?

- Core business objectives will remain consistent; however, specific attention will be given to opportunities for synergistic activities in four areas: regulatory compliance, growth, efficiency and best management practices, with sustainability being a common theme in all areas.
- The drivers for these four activity areas include: protecting public health and private property; meeting all regulatory requirements; ensuring the Standard of Care provision is met; supporting Council's objectives of economic development and growth; gaining efficiencies to reduce long term costs; investing in succession planning; harnessing innovative technologies; and maintaining a high level of service to consistently meet customers' expectations.
- Continuing focus on delivering a financially sustainable utility in the near term and infrastructure sustainability as the 20-Year Capital Plan is implemented.
- Continuing efforts to meet new regulatory requirements under the Safe Drinking Water Act, Fire Code, Water Opportunities (and Conservation) Act, Clean Water Act (Source Water Protection Plans), and Green Energy Act (Electrical Efficiency).

What do you plan to do?

2014

Compliance

- Visual flow identification/colour coding of fire hydrants owned and maintained by the Water utility, in accordance with the Fire Code, utilizing the City's computerized hydraulic model (requiring validation through a significant increase in field testing).
- Implement the Source Water Protection Plan as it relates to Risk Management Officer and Risk Management Inspectors liaison with private property owners within well-head protection areas as mandated under the Clean Water Act.

- Continue with implementing the newly established air and vacuum valve chamber inspection program, including chamber rehabilitation and valve replacement to eliminate and/or substantively reduce contamination risk as required under the Safe Drinking Water Act.
- Continual improvement initiatives associated with the Drinking Water Quality Management System as required under our Utility Licensing requirements included in the Safe Drinking Water Act. The City's Council-endorsed Operational Plan mandates an annual review of activities/procedures, with an accompanying report to Council regarding its status, and identification of recommended improvement opportunities.
- Implement a more rigorous Environmental Management approach to regulatory compliance by providing additional resources to plan, monitor and document our Drinking Water Quality Management System.

- ***Growth***
  - Completion of Growth Master Plan for Water infrastructure and coordination with GMIS.
  - Support for the Development Charges update.
  - Support the Industrial Land Development Strategy.
  - Infill and intensification analysis of existing water distribution system utilizing the computerized hydraulic model.
- ***Efficiency***
  - Assessing energy conservation opportunities at the City's two main pumping stations, and continuing to make energy efficiency gains at the remaining facilities through installation of new, more energy efficient equipment, and review for operational optimization opportunities.
  - Implementation of District Meter Areas to reduce non-revenue water, to analyze for water leakage and identify/prevent future watermain breaks.
  - Assessment and potential implementation of large customer water meter automated reading system to reduce meter reading costs and evaluate customers' real-time consumption data, which further assists in hydraulic model calibration.
- ***Best Management Practices***
  - Set a strategy for achieving an appropriate minimum reserve fund balance for the water utility, consistent with corporate wide financial objectives.
  - Initiate development of a Computerized Maintenance Management System, to bring the utility maintenance and work flow management up to industry standards. This will result in staff resource efficiencies, enhanced documentation, and cost tracking of maintenance activities, while also ensuring compliance with regulatory requirements.
  - Implement new technologies for condition assessment of critical infrastructure to support corporate asset management decision-making, optimized renewal efforts, and minimizing the risks associated with the effects from large diameter transmission main failures.
  - Undertake additional efforts in shut-off valve maintenance, ensuring operational reliability, reducing customer impacts, and reduced staffing costs for emergency repairs of watermain breaks.

- Augmenting current professional staff complements to support compliance, growth and efficiency initiatives, as well as developing capacity to support succession plans that ensure appropriately experienced and certified staff perform the necessary functions in accordance with Collective Agreement and regulatory requirements.
- Build on existing customer service and communication successes and develop a customer service charter that serves to limit the amount of time it takes to handle billing and service related issues; increase visibility in the community; provide additional avenues to find information and learn how to lower monthly bills; develop an enhanced customer contact website in conjunction with London Hydro; implement and measure drinking water education curriculum for local elementary and secondary schools.
- Financial monitoring of the major factors in the financial forecast: rate structure changes, consumption forecasts, construction cost indexing, non-revenue water management and reserve fund balances.

2015 – 2018

- ***Compliance***
  - Anticipate achieving full compliance under the Fire Code with respect to colour coding of fire hydrants.
  - Full operational implementation of the Source Water Protection Plan in 2015 as it relates to Risk Management Officer and Risk Management Inspectors liaison with private property owners within well-head protection areas. Additional consideration to be given to when to decommission remaining active wells.
  - Full operational implementation of the air and vacuum valve maintenance program to eliminate and/or substantively reduce contamination risk.
  - Continual improvement initiatives associated with the Drinking Water Quality Management System will be ongoing, summarized and reported to Council annually.
  - Long term planning will be initiated to address anticipated constraints imposed under the Intra-basin Transfer restrictions associated with the future use of the Lake Huron Water Supply System in accordance with Safeguarding and Sustaining Ontario's Water Resources for Future Generations proposal. Draft regulations are anticipated in 2014.
- ***Growth***
  - Implement various Development Charges-funded growth projects, including waterworks to support the Industrial Land Development Strategy.
- ***Efficiency***
  - Implement energy conservation projects at the City's water pumping stations.
  - Continue deployment and monitoring of District Meter Areas, by analyzing leakage rates, and to prevent future watermain breaks by identifying leaks prior to failure.
  - Continue liaison with our large customers, using the water meter automated reading system to provide them with real-time consumption data. This data will also further assist in hydraulic model calibration accuracy, and reduce meter reading costs.

2015 – 2018 (cont'd)

Best Management Practices

- Achieve financial sustainability in the near term and continue with infrastructure sustainability as the 20-Year Capital Plan is implemented.
- Development and optimization of the Computerized Maintenance Management System. Initiate long-term strategic planning of assets based on preliminary results of the CMMS implementation.
- Continue with the program(s) for monitoring, analyzing, and assessing the condition of large diameter transmission mains, through full development of the implemented technologies.
- Fully integrate the corporate asset management decision-making process with current Water utility asset management practices.
- Fully design an operational hydraulic model and water quality model to support long term planning, subdivision development and servicing, intensification analysis, and operational planning and response to routine maintenance and emergency situations, including threats to water quality.
- Anticipated customer service initiatives will include:
    - Web and app-based customer portals to retrieve and analyse water use data for our customers
    - Fixed network meter reading for ICI and expansion to residential sectors to allow more detailed water use information and tracking.
    - Expansion of the Eco Yard Evaluation program into a year round water/energy audit or leak check in local homes and businesses – currently free of charge.
    - More targeted value of water and conservation messaging.
    - Further development of water curriculum in schools to include other elements of the water cycle, i.e. wastewater, storm water.
    - Develop a grey water/rainwater use program and strategy.

Key Performance Indicators							
Description of measure	*2012*	*2013*	*2014*	*2015*	*2016*	*2017*	*2018*
How Much?							
1. Water sold in million cubic meters	43.1	42.0	41.0	40.7	40.4	40.1	39.8
2. Percentage of existing watermains renewed (1)	0.83%	1.20%	1.26%	1.25%	1.49%	1.41%	1.40%
3. Number of lead services replaced (2)	440	400	500	500	500	500	500
4. Number of water meters installed (3)	10,739	6,000	15,000	15,000	15,000	15,000	15,000
How Well?							
5. Non-revenue water (% of total pumped) (4)	11.2%	11.0%	10.8%	10.6%	10.4%	10.2%	10.0%
6. Average annual cost for residential customer	$306	$336	$363	$388	$400	$412	$424
Is Anyone Better Off?							
7. Number of boil water advisories	0	0	0	0	0	0	0
8. Number of customers with service interruption of more than 2 hours (5)	3,000	3,000	3,000	3,000	3,000	3,000	3,000
9. Number of watermain breaks per 100 km	6.6	8.2	8.2	8.1	8.0	8.0	7.9
10. Water quality complaints (6)	119	300	300	300	300	300	295
11. Ministry of Environment Report Card score (7)	95.8%	98.0%	100.0%	100.0%	100.0%	100.0%	100.0%

NOTES: 2012 values represent actual amounts; 2013-2018 values represent forecasts

(1) Renewal is defined as replacement or structural relining and does not include cement mortar relining or anode protection.

(2) Delivery of the Corrosion Plan is being re-evaluated for 2014.

(3) Meter replacement program delivery is being re-evaluated in 2013.

(4) Reduction in non-revenue water is based on implementation of District Meter Areas City-wide over 5 years.

(5) Number of customers out of service is an approximation based on watermain break records.

(6) Number of complaints in 2012 is a mixture of "per event" and "individual complaints" versus absolute number of complaints. Process of complaints logging is under review from a "best practices" perspective. 2013 complaints are expected to increase as more hydrants are flow tested, which may agitate rust sediment in cast iron watermains.

(7) Due to the Air and Vacuum Valve maintenance program only being launched in 2013, the score may be impacted until the program is fully implemented. A score lower than 100% does not indicate that drinking water was unsafe at any time.

Water
2014 Object of Expenditure and Source of Revenue Summary
($000's)

Object of Expenditure and Source of Revenue	2012 Actuals	2013 Revised Budget	2014 Approved Budget	Change from 2013	Prior Year Change
Revenues					
Residential	30,547	33,302		(33,302)	-100.0%
Commercial, Institutional, Industrial & Multi Family Residential	25,331	27,020		(27,020)	-100.0%
Water Usage Charges [1]			44,821	44,821	100.0%
Water Infrastructure Charges [1]			21,047	21,047	100.0%
Fire Protection Charges [1]			2,529	2,529	100.0%
Customer Assistance Charges [1]			305	305	100.0%
Other Revenues [2]	2,541	2,242	942	(1,300)	-58.0%
Total Revenues	**58,419**	**62,564**	**69,644**	**7,080**	**11.3%**
Operating Related					
Purchase of Water	19,599	20,552	20,822	270	1.3%
Personnel Costs	7,164	8,247	8,257	10	0.1%
Administrative, Other & Recovered Expenses	3,096	3,257	3,275	18	0.6%
Billing & Customer Service	1,692	2,677	2,407	(270)	-10.1%
Purchased Services	2,756	2,613	2,783	170	6.5%
Materials & Supplies	1,757	2,289	2,223	(66)	-2.9%
Equipment & Rentals	1,603	1,388	1,555	167	12.0%
Total Operating Related	**37,667**	**41,023**	**41,322**	**299**	**0.7%**
Financial Expenses					
Capital Levy	12,575	13,601	16,856	3,255	23.9%
Reserve Fund Contribution [3]	7,918	7,657	11,102	3,445	45.0%
Debt Servicing Costs	259	283	364	81	28.6%
Total Financial Expenses	**20,752**	**21,541**	**28,322**	**6,781**	**31.5 %**
Total Expenditures	**58,419**	**62,564**	**69,644**	**7,080**	**11.3%**

(1) Reflects revised categorization of revenue accounts after the implementation of the new water rate structure effective March 1, 2013.
(2) Prior to 2014, meter revenues were included in Other Revenues. These charges are now reflected in Water Infrastructure Charges.
(3) Includes contributions to reserves for Local Improvements and Self Insurance.

Water
2014 Operating Program Budget Summary
($000's)

Program	2012 Actuals	2013 Revised Budget	2014 Approved Budget	Change from 2013	Prior Year Change
Total Revenues	**58,419**	**62,564**	**69,644**	**7,080**	**11.3 %**
Engineering & Operations					
Engineering	1,249	1,377	1,681	304	22.1%
Water Operations	11,778	13,248	13,244	(4)	0.0%
Purchase of Water	19,599	20,552	20,822	270	1.3%
General Administration	3,349	3,169	3,168	(1)	0.0%
Billing & Customer Service	1,692	2,677	2,407	(270)	-10.1%
Total Engineering & Operations	**37,667**	**41,023**	**41,322**	**299**	**0.7 %**
Total Capital Contributions & Financial Expenses	**20,752**	**21,541**	**28,322**	**6,781**	**31.5 %**
Total Expenditures	**58,419**	**62,564**	**69,644**	**7,080**	**11.3 %**

Water
Overview of Program Changes - Revenue
($000's)

Explanation of Changes in Revenue	Change ($000's)
Revenue impact of the implementation of the new water rate structure effective March 1, 2013, partially offset by reduced water consumption forecasts. Incremental revenues are driven primarily by the new Fire Protection and Customer Assistance Charges and the shifting of rate blocks between the various customer classes. Water consumption forecast has been reduced from 43.2M m^3 in 2013 to 41.0M m^3 in 2014 as a result of the continuing trend of water conservation.	1,574
Additional revenue as a result of growth in the number of customer accounts.	211
Change in other revenues, primarily due to a larger than previously forecasted number of water service applications.	228
Approved 8% rate increase for 2014.	5,067
Total Change in Revenues	**7,080**

Water
Overview of Program Changes - Expenditures
($000's)

Explanation of Changes in Expenditures	Change ($000's)
Increase in the wholesale cost of purchasing water from the Elgin Area and Lake Huron Primary Water Supply Systems. Rates are anticipated to increase by 9% and 5% respectively. This increase is partially offset by a reduction in the volume of water purchased.	270
Decrease in billing and customer service costs, driven by a reduction in the amount budgeted for billing services provided by London Hydro as a result of the Service Agreement negotiated in 2013. This is partially offset by an increase in Customer Assistance expenditures.	(270)
Increase of $273 thousand in personnel costs due to an additional Engineer and Technologist to support necessary risk reduction initiatives in Water Engineering, as well as a Waterworks Compliance Coordinator to support operational initiatives related to compliance with the Safe Drinking Water Act. This is offset by wage, salary & benefits adjustments in accordance with existing employment agreements.	10
Increases in equipment & rentals, purchased services (driven by insurance, utility locate and Source Water Protection costs) and administrative expenses, partially offset by a decrease in materials & supplies. Note that the increase in administrative expenses was minimal due to a $157 thousand transfer of an additional share of other administrative costs from Water to Wastewater and Treatment to move to full cost accounting for the utilities.	289
Operating Related	**299**
Increased contributions to reserve funds to reflect capital requirements outlined in the 20 Year Water System Plan and the objective of maintaining sufficient reserve fund balances to support an estimated asset base of $2 billion.	3,445
Increase in capital levy required to achieve target of 75% of 2014 life cycle projects funded on a pay-as-you-go basis, consistent with the Financial Plan.	3,255
Increased debt servicing costs resulting from debt issued for prior years approved capital projects.	81
Capital Related	**6,781**
Total Change in Expenditures	**7,080**

Water
Four Year Operating Forecast

Revenue

The projected rate increases of 8% in 2014, 7% in 2015 and 3% thereafter have been incorporated into the 20 Year Water System Plan. While the declining water consumption trend helps to postpone future works, it continues to place significant pressure on the City's capacity to raise funds to operate, maintain and improve the existing system. The implementation of the new water rate structure in 2013 partially offsets declining consumption by shifting a greater portion of total revenues to fixed charges. However, the City remains heavily dependent on water consumption to generate sufficient revenues. The projected rate increases are offset by an anticipated net consumption reduction of 1% (assuming a 1% growth factor and an average consumption reduction of 2%) until 2021 and an anticipated net consumption reduction of 0% (assuming a 1% growth factor and an average consumption reduction of 1%) thereafter. Deviations from these projections, changes to the economic climate or legislative requirements may result in modifications to the 20 Year Water System Plan to ensure sustainability is achieved in an acceptable timeframe.

Engineering & Operations

For 2015 to 2018, all operating budget categories, with the exception of the Purchase of Water, are projected to increase by an anticipated rate of inflation of 3%. Budget drivers impacting the Purchase of Water are net water demand and rate increases imposed by the Regional Water Supply. Net demand for water is projected to decrease by 1% annually.

Capital Financing

The forecast from 2015 to 2018 projects the capital levy to be at 75% of the average ten year life cycle renewal cost. Achieving the 75% capital levy is consistent with the Strategic Financial Plan to ensure that life cycle renewal projects are primarily funded on a "pay-as-you-go" basis. Contributions to reserve funds will change depending on the timing of capital projects identified in the 20 Year Water System Plan.

Water
Four Year Operating Forecast
($000's)

Program	2014 Approved Budget	2015 Budget Forecast	Incr. /(Decr.) Over 2014 $	Incr. /(Decr.) Over 2014 %	2016 Budget Forecast	Incr. /(Decr.) Over 2015 $	Incr. /(Decr.) Over 2015 %	2017 Budget Forecast	Incr. /(Decr.) Over 2016 $	Incr. /(Decr.) Over 2016 %	2018 Budget Forecast	Incr. /(Decr.) Over 2017 $	Incr. /(Decr.) Over 2017 %
Water Rate Increase Forecast	8.0%	7.0%			3.0%			3.0%			3.0%		
Revenues													
Water Usage Charges	44,821	47,586	2,765	6.3%	48,632	1,046	2.3%	49,700	1,068	2.2%	50,792	1,092	2.2%
Water Infrastructure Charges	21,047	22,737	1,690	8.0%	23,646	909	4.0%	24,591	945	4.0%	25,574	983	4.0%
Fire Protection Charges	2,529	2,733	204	8.1%	2,843	110	4.0%	2,958	115	4.0%	3,077	119	4.0%
Customer Assistance Charges	305	308	3	1.0%	312	4	1.3%	315	3	1.0%	318	3	1.0%
Other Revenues	942	1,008	66	7.0%	1,038	30	3.0%	1,069	31	3.0%	1,101	32	3.0%
Total Revenues	**69,644**	**74,372**	**4,728**	**6.8%**	**76,471**	**2,099**	**2.8%**	**78,633**	**2,162**	**2.8%**	**80,862**	**2,229**	**2.8%**
Engineering & Operations													
Engineering	1,681	1,731	50	3.0%	1,783	52	3.0%	1,836	53	3.0%	1,891	55	3.0%
Water Operations	13,244	13,641	397	3.0%	14,051	410	3.0%	14,473	422	3.0%	14,907	434	3.0%
Purchase of Water	20,822	21,837	1,015	4.9%	22,907	1,070	4.9%	23,812	905	4.0%	24,281	469	2.0%
General Administration & Financial Expenses	3,168	3,263	95	3.0%	3,361	98	3.0%	3,462	101	3.0%	3,566	104	3.0%
Billing & Customer Service	2,407	2,479	72	3.0%	2,554	75	3.0%	2,631	77	3.0%	2,710	79	3.0%
Total Engineering & Operations	**41,322**	**42,952**	**1,630**	**3.9%**	**44,656**	**1,704**	**4.0%**	**46,214**	**1,558**	**3.5%**	**47,355**	**1,141**	**2.5%**
Capital Funding													
Capital Levy	16,856	17,672	816	4.8%	22,510	4,838	27.4%	18,973	(3,537)	-15.7%	19,449	476	2.5%
Reserve Fund Contribution	11,102	13,334	2,232	20.1%	8,891	(4,443)	-33.3%	13,032	4,141	46.6%	13,644	612	4.7%
Debt Servicing Costs	364	414	50	13.7%	414	0	0.0%	414	0	0.0%	414	0	0.0%
Total Capital Funding	**28,322**	**31,420**	**3,098**	**10.9%**	**31,815**	**395**	**1.3%**	**32,419**	**604**	**1.9%**	**33,507**	**1,088**	**3.4%**
Total Expenditures	**69,644**	**74,372**	**4,728**	**6.8%**	**76,471**	**2,099**	**2.8%**	**78,633**	**2,162**	**2.8%**	**80,862**	**2,229**	**2.8%**

Water
Performance Measures and Staffing

	2012	2013	2014	2015	2016	2017	2018
Performance Measures	**Actual**	**Revised**	**Approved**	**Forecast**			
Activity Measures							
Water sold in million cubic meters	43.1	42.0	41.0	40.7	40.4	40.1	39.8
Lead services replaced	440	400	500	500	500	500	500
Water meters installed	10,739	6,000	15,000	15,000	15,000	15,000	15,000
% of existing watermains renewed	0.83%	1.20%	1.26%	1.25%	1.49%	1.41%	1.40%
Efficiency Measures							
Average cost for residential customer [1]	$306	$336	$363	$388	$400	$412	$424
Average residential consumption (m^3 per year)	184.5	181.2	172.3	169.3	167.5	165.6	163.4
Non revenue water (% of pumped) [2]	11.2	11.0	10.8	10.6	10.4	10.2	10.0
Effectiveness / Quality / Satisfaction Measures							
# of boil water advisories	0	0	0	0	0	0	0
# of watermain breaks per 100 km [3]	6.6	8.2	8.2	8.1	8.0	8.0	7.9
# of customers with a service interruption of more than 2 hours	3,000	3,000	3,000	3,000	3,000	3,000	3,000
Ministry of Environment Report Card score [4]	95.8%	98.0%	100.0%	100.0%	100.0%	100.0%	100.0%
Water quality complaints [5]	119	300	300	300	300	300	295
Staffing	**Budget**	**Budget**					
Full-time equivalents #	96.4	94.5	95.3	95.3	95.3	95.3	95.3
Increase / (Decrease) over previous year			0.8	0.0	0.0	0.0	0.0
Full-time employees #	81	81	84	84	84	84	84
Increase / (Decrease) over previous year [6]			3	0	0	0	0

Notes:

(1) The average cost per household estimate for 2014-2018 is based on 2013 consumption of 181.2 m^3 and does not incorporate future projected consumption declines. Actual cost per household may be lower as a result.

(2) Dependent on non-revenue usage (fire, flushing, meter inaccuracy), main breaks, and leakage.

(3) Dependent on renewal programs and weather (temperature).

(4) A score lower than 100% does not indicate that drinking water was unsafe at any time. Due to the Air and Vacuum Valve maintenance program only being launched in 2013, the score may be impacted until the program is fully implemented.

(5) Number of complaints in 2012 is a mixture of "per event" and "individual complaints" versus absolute number of complaints. Process of complaints logging is under review from a "best practices" perspective. 2013 complaints are expected to increase as more hydrants are flow tested, which may agitate rust sediment in cast iron watermains.

(6) Additional positions reflect staff requirements to manage new and existing operational and compliance requirements. Business cases have been prepared to justify these new positions.

Water

2014 Capital Budget

With Forecasts

Water
Capital Expenditure Linkage to Safe Drinking Water Act

The Safe Drinking Water Act (2002) became a statutory requirement on January 1, 2013. The purpose of this Act is to ensure the provision of safe drinking water by regulating drinking water supply and testing. Elements of this legislation include accreditation of licensed operators, mandated training and certification, and prescribed testing standards. Additionally, a statutory standard of care is required on the part of elected officials and other individuals having oversight responsibility to prevent waterborne disease outbreaks.

The Safe Drinking Water Act outlines 5 "barriers" that must be achieved to ensure compliance with the legislation:
(1) Source Water Protection
(2) Effective Treatment
(3) Secure Distribution
(4) Effective Monitoring
(5) Effective Management

The Water capital program is intended to address these "barriers". Some capital projects address multiple "barriers" while others address only one. Each capital project on the subsequent pages has been categorized according to the following legend to identify the "barriers" it is intended to address:

SWP	Source Water Protection
ET	Effective Treatment
SD	Secure Distribution
MON	Effective Monitoring
MGT	Effective Management

Water
Capital Program
($000's)

Service Grouping:	Water	2014 Approved -	$27,692
Committee:	Civic Works Committee	2015 - 2018 Forecast -	$135,817

Objective: The Water Capital program includes transmission and distribution piping, pumping stations, and reservoir storage to meet the growth demands of the city as well as repair and rehabilitation to extend the life cycle of existing infrastructure. The elements in this program are generally outlined in such engineering studies and documents as the London Water Master Plan or the Water Distribution System Needs Analysis, or resulting from ongoing modeling and analysis of the existing system.

Page Number	Project Number	Project	Life Cycle Renewal	Growth	Service Improvement
44	EW1612-14	Meters & Devices	400		
44	EW1627-14	Meter Replacement Program	1,800		
58	EW1630	District Meter Areas			500
58	EW2404	New Vehicles & Equipment			130
44	EW3409-14	Pumping Stations Major Repairs	150		
44	EW3525	Cathodic Protection Program	400		
45	EW3528	Drinking Water Quality Management Standard	10		
45	EW3538	CPP AFO Monitoring Program	200		
46	EW3540	Elgin Middlesex Pumping Station - Capital Maintenance	50		
52	EW3551	Hyde Park - Sarnia Road High Level Watermain Phase II		1,153	
46	EW3563-14	Main Rehabilitation	4,930		
46	EW3572	Commissioners Road Watermain Replacement	50		
52	EW3590	Uplands Pumping Station Upgrade		28	
53	EW3591	Hyde Park Pumping Station Upgrade		55	
53	EW3595	Hyde Park Road Feeder Watermain		2,045	

Water
Capital Program
($000's)

Service Grouping:	Water	2014 Approved -	$27,692
Committee:	Civic Works Committee	2015 - 2018 Forecast -	$135,817

Page Number	Project Number	Project	Life Cycle Renewal	Growth	Service Improvement
54	EW3606	Southeast Pressure Zone Feeder Watermain		325	
54	EW3611	Highbury Avenue South Trunk Watermain		531	
47	EW3624	Burbrook Watermain Upgrade Phase II	1,000		
48	EW3656-2	Wellington Road Area Watermain Replacement - Phase II	1,100		
56	EW3692	Medway - Wonderland Road Trunk Watermains		100	
49	EW3710	Downtown Watermain Replacement	105		
49	EW3717-14	Inspect Trunk Concrete Pressure	620		
49	EW3754-14	Abandoned Wells Decommissioning	331		
50	EW3765-14	Main Replacement - Engineering	7,039		
57	EW3772-14	Water Efficiency Program		350	
50	EW3787-14	Main Replacements with Major Road Works	2,605		
50	EW3833-14	Main Replacement Maintenance	935		
51	EW3842-14	Replace Lead Water Services	750		
		Total by Classification	**$22,475**	**$4,587**	**$630**
		Total 2014 Water Capital		**$27,692**	

Water
Capital Expenditure Summary by Classification
($000's)

Water	Prior Years	2013 [1]	2014	2015	2016	2017	2018	2019 to 2023	Total
Life Cycle Renewal	9,996	19,554	22,475	23,562	30,014	25,297	25,932	149,339	306,169
Growth	9,814	2,224	4,587	8,602	2,296	11,230	2,365	15,149	56,267
Service Improvement	855	3,120	630	1,720	880	1,969	1,950	6,845	17,969
Total Water	**20,665**	**24,898**	**27,692**	**33,884**	**33,190**	**38,496**	**30,247**	**171,333**	**380,405**

(1) The 2013 Approved Capital Budget decreased from $26.7 million to $24.9 million mainly due to budget reductions for Oxford Street West Feeder Watermain (-$1.2 million), Southdale West Main Replacement (-$0.25 million), Royal York Watermain (-$0.25 million) and Wellington Road Watermain (-$0.1 million); noting that actual costs came in under budget for these projects.

Water	Prior Years	2013	2014	2015	2016	2017	2018	2019 to 2023	Total
Tangible Capital Asset	19,446	22,292	26,181	32,264	31,470	36,907	28,803	164,893	363,956
Non-Tangible Capital Asset [2]	1,219	2,606	1,511	1,620	1,720	1,589	1,444	6,440	16,449
Total Water	**20,665**	**24,898**	**27,692**	**33,884**	**33,190**	**38,496**	**30,247**	**171,333**	**380,405**

(2) A separate non-tangible capital asset (Non-TCA) section has been added because Non-TCA projects could be classified as Life Cycle, Growth, or Service Improvement. Non-TCA are expenditures that will not result in the creation of a tangible asset (having physical substance). It should be noted that the Non-TCA summary only includes projects that are 100% Non-TCA.

Water
Capital Source of Financing Summary
($000's)

Water	Prior Years	2013	2014	2015	2016	2017	2018	2019 to 2023	Totals
RATE SUPPORTED									
Capital Levy	4,487	13,601	16,856	17,672	22,510	18,973	19,449	111,985	225,533
Capital Water Reserve Fund	7,022	8,746	7,522	6,935	8,268	8,222	9,459	45,065	101,239
Industrial Oversizing Water Reserve Fund	5,437	50	601	5,170	86	608	541	1,370	13,863
Debenture	1,208								1,208
Total Rate Supported	**18,154**	**22,397**	**24,979**	**29,777**	**30,864**	**27,803**	**29,449**	**158,420**	**341,843**
NON-RATE SUPPORTED									
Debenture - Non Rate Supported (City Services - Water Reserve Fund)						4,000			4,000
City Services Water Reserve Fund [1]	2,286	1,087	2,270	3,034	1,838	5,620	223	8,571	24,929
City Services Corporate Services Reserve Fund [1]	225	156	24	24	69	24	156	298	976
Federal Gas Tax Grant		628	419	419	419	419	419	2,095	4,818
Other Contributions (Prov Grants, Cash Pmts) [2]		630		630		630		1,949	3,839
Total Non-Rate Supported	**2,511**	**2,501**	**2,713**	**4,107**	**2,326**	**10,693**	**798**	**12,913**	**38,562**
Total Sources of Financing	**20,665**	**24,898**	**27,692**	**33,884**	**33,190**	**38,496**	**30,247**	**171,333**	**380,405**

(1) Growth splits for 2014 and beyond are consistent with the 2009 Development Charge Study.

(2) Budget adjustment made to prior year approved budget for Local Improvement required to be reflected in 2013 for reconciliation purposes.

Water
Capital Expenditure Detail
($000's)

Service Grouping: Water — **Category: Life Cycle Renewal**

	Safe Drinking Water Act Classification	Prior Years	2013	2014	2015	2016	2017	2018	2019 to 2023	Total
EW1612-14 Meters & Devices Purchase and installation of new water meters, valves and related equipment. Includes cost of meters for all new development and for individual metering of existing condominiums as required. Ensures fair billing based on actual water consumption. **2014 Financing:** Capital Levy	MGT		400	400	400	400	400	400		2,400
EW1627-14 Meter Replacement Program Residential water meter replacement strategy to eliminate backlog of water meters that have surpassed their useful life. **2014 Financing:** Water Reserve Fund	MGT		1,800	1,800	1,800	1,800	1,800	1,800	9,000	19,800
EW2310 Western Road Watermain Replacement To replace the watermain on Western Road from Platt's Lane to Oxford Street.	SD								1,300	1,300
EW3409-14 Pumping Stations Major Repairs Ongoing annual maintenance and upgrades to the water pumping stations and bulk water stations. **2014 Financing:** Capital Levy	SD		150	150	150	150	150	150	750	1,650
EW3525 Cathodic Protection Program To implement, test and monitor Cathodic Protection on steel, concrete and ductile iron watermains to prolong the lifespan of existing watermains. **2014 Financing:** Capital Levy	SD	275		400	400	100		100	200	1,475

Water
Capital Expenditure Detail
($000's)

Service Grouping: Water — **Category: Life Cycle Renewal**

	Safe Drinking Water Act Classification	Prior Years	2013	2014	2015	2016	2017	2018	2019 to 2023	Total
EW3526 Arva Pumping Station Upgrades To undertake major pump and valve maintenance/ replacement. Equipment is 40 years old and requires ongoing repairs and/or is no longer performing effectively or efficiently.	SD	3,088	50		50	50	50	50	250	3,588
*** EW3528 Drinking Water Quality Management Standard** The "*Safe Drinking Water Act*" and the "*Drinking Water Quality Management Standard*" legislation requires the City, as the operating authority, to be accredited. The requirements are fulfilled by establishing and maintaining a quality management system, including internal and external auditing. **2014 Financing:** Capital Levy	MON, MGT	170		10	10	50	10	10	130	390
*** EW3533-14 Lead Mitigation Strategy** An annual program to support the replacement of lead water services through increased public awareness of the Water By-law W-8. Recommendation 35 in the Part II Report from the Walkerton Inquiry states "lead service lines should be located and replaced over time with safer materials".	SD				109	109	109	109	545	981
*** EW3538 CPP AFO Monitoring Program** Annual monitoring costs associated with the installation of an acoustic fibre optic cable inside a watermain to alert City staff to potential failures of a concrete pressure pipe. **2014 Financing:** Capital Levy	SD, MON, MGT		200	200	200	200	200	200	1,000	2,200

Note: * represents projects that are classified as non-tangible capital assets. These expenditures will not result in the creation of a tangible asset (having physical substance).

Water
Capital Expenditure Detail
($000's)

Service Grouping: Water **Category: Life Cycle Renewal**

	Safe Drinking Water Act Classification	Prior Years	2013	2014	2015	2016	2017	2018	2019 to 2023	Total
EW3540 Elgin Middlesex Pumping Station - Capital Maintenance	SD	1,450	50	50	50	50	50	50	250	2,000
Project required for the ongoing annual maintenance of London's components in the Elgin-Middlesex (London) Pumping Station at St. Thomas.										
2014 Financing: Capital Levy										
EW3541 Elgin Middlesex Pumping Station - SCADA Upgrade	SD	600						300		900
To repair and upgrade equipment controllers and computerized SCADA system at Elgin Middlesex Pumping Station.										
EW3563-14 Main Rehabilitation	SD		4,301	4,930	5,430	5,930	6,430	6,930	42,150	76,101
An annual program for the rehabilitation of existing watermains throughout the City of London in order to maintain flow capacity and provide safe, cost effective water.										
2014 Financing:										
Capital Levy $4,511										
Federal Gas Tax Grant 419										
Total Financing $4,930										
EW3572 Commissioners Road Watermain Replacement	SD			50	1,000					1,050
To replace the watermain on Commissioners Road from Wharncliffe Road to Wonderland Road - Phase II. New watermain is required to replace existing system which has surpassed its useful life.										
2014 Financing: Water Reserve Fund										

Water
Capital Expenditure Detail
($000's)

Service Grouping: Water **Category: Life Cycle Renewal**

	Safe Drinking Water Act Classification	Prior Years	2013	2014	2015	2016	2017	2018	2019 to 2023	Total
EW3580 Huron Street River Crossing Remedial Work To replace the existing 600mm trunk watermain under the Thames River behind Huron Street and Philip Aziz Avenue.	SD	570				2,678			500	3,748
EW3617 Springbank Reservoir No. 2 Replacement Springbank Reservoir Cell No. 2 reconstruction is one of the largest projects on Water's Long Term Plan. An assessment of storage needs and changes to the operational procedures have increased the anticipated service life. Deferral of the project by 10 years is expected and results in significant debt deferral for the water utility. Interim inspection and repair costs can be accommodated within the current maintenance funding of the reservoir. Further studies will be undertaken to assess the timing and location for additional reservoir capacity following commissioning of the Southeast Reservoir.	SD	953					485		16,025	17,463
EW3624 Burbrook Watermain Upgrade Phase II Replacement of watermain and water service in the existing Burbrook Trunk Storm Sewer and Burbrook Lateral area. New watermain required to replace undersized existing system which has surpassed its useful life. Coordinated with sewer projects ES3054 and ES3058. **2014 Financing:** Water Reserve Fund	SD			1,000		1,300	1,400		3,400	7,100
EW3627 SCADA Equipment Replacement The planned replacement of existing SCADA equipment.	SD, MON, MGT	165			105			120	135	525

Water
Capital Expenditure Detail
($000's)

Service Grouping: Water **Category: Life Cycle Renewal**

	Safe Drinking Water Act Classification	Prior Years	2013	2014	2015	2016	2017	2018	2019 to 2023	Total
EW3656-2 Wellington Road Area Watermain Replacement - Phase II To replace the watermain on Wellington Road from the Thames River to Base Line Road. New watermain required to replace existing system which has surpassed its useful life. Coordinated with sewer project ES2464 - Separation and CSO Program. **2014 Financing:** Water Reserve Fund	SD		752	1,100		1,000				2,852
EW3674 Wharncliffe Road Watermain Replacement To replace watermain on Wharncliffe Road between Becher Street and Springbank Drive. Coordinated with transportation project TS1355 - Wharncliffe Road Widening.	SD								800	800
EW3702 Fanshawe Park Road Watermain Replacement To replace the watermain on Fanshawe Park Road from Adelaide Street to Highbury Avenue. Coordinated with transportation project TS1475 and sewer project ES4424.	SD				184	1,658				1,842
EW3707 Southdale Road Watermain Replacement The replacement and rehabilitation of existing watermains on Southdale Road between Wellington Road and Pond Mills in conjunction with transportation project TS1487 and sewer project LI2040.	SD							191	1,718	1,909
EW3708 Trunk Watermain Valve Chambers To install new valves on existing trunk watermains.	SD	820				400		500	800	2,520

Water
Capital Expenditure Detail
($000's)

Service Grouping: Water **Category: Life Cycle Renewal**

	Safe Drinking Water Act Classification	Prior Years	2013	2014	2015	2016	2017	2018	2019 to 2023	Total
EW3710 Downtown Watermain Replacement	SD	1,605		105	1,500		105	1,500	1,710	6,525
To replace deficient watermains and services. Watermain and water services undersized or useful life has been surpassed. Coordinated with transportation project TS1306 and sewer project ES2414.										
2014 Financing: Water Reserve Fund										
EW3713 Sarnia Road Watermain Replacement	SD								1,366	1,366
To replace the watermain on Sarnia Road from Wonderland Road to Sleightholme Road. New watermain required to replace existing system which has surpassed its useful life. Construction scheduled in 2022 deferred from 2012. Coordinated with transportation project TS1484 which has been deferred to beyond 2021 under Development Charges - related deferrals approved by Council & London Development Institute (LDI) in October 2010.										
*** EW3717-14 Inspect Trunk Concrete Pressure**	SD, MON		620	620	620	620	620	620	2,800	6,520
Project required for structural analysis of existing 900mm to 1,350mm concrete watermains.										
2014 Financing: Capital Levy										
*** EW3754-14 Abandoned Wells Decommissioning**	SWP		331	331	331	331	300			1,624
To decommission former London Public Utilities Commission abandoned wells. Ontario Regulation 903.Section 21 (3) requires that the wells be properly decommissioned.										
2014 Financing: Capital Levy										

Note: * represents projects that are classified as non-tangible capital assets. These expenditures will not result in the creation of a tangible asset (having physical substance).

Water
Capital Expenditure Detail
($000's)

Service Grouping: Water — **Category: Life Cycle Renewal**

	Safe Drinking Water Act Classification	Prior Years	2013	2014	2015	2016	2017	2018	2019 to 2023	Total
EW3765-14 Main Replacement - Engineering	SD		6,319	7,039	7,039	8,792	8,792	8,506	42,530	89,017
An annual program for replacement of watermain and water services as outlined in the Condition Assessment Program Needs Study. New watermain and water services required to replace existing systems which have surpassed their useful life. New water supply required to provide fire flows to the community. Coordinated with sewer project ES2414 - Sewer Replacement Program.										
2014 Financing:										
Capital Levy $6,644										
Water Reserve Fund 395										
Total Financing $7,039										
EW3787-14 Main Replacements with Major Road Works	SD		2,323	2,605	2,499	2,711	2,711	2,711	13,555	29,115
Replacement of watermains that have reached their useful life. Coordinated with major road works.										
2014 Financing: Capital Levy										
EW3833-14 Main Replacement Maintenance	SD		908	935	935	935	935	935	4,675	10,258
Watermain replacements in conjunction with sewer and road replacements.										
2014 Financing: Capital Levy										

Water
Capital Expenditure Detail
($000's)

Service Grouping: Water **Category: Life Cycle Renewal**

	Safe Drinking Water Act Classification	Prior Years	2013	2014	2015	2016	2017	2018	2019 to 2023	Total
EW3842-14 Replace Lead Water Services	SD		750	750	750	750	750	750	3,750	8,250
Fifteen year program to replace lead water services. Recommendation from the Walkerton Inquiry Report states "lead service lines should be located and replaced over time with safer materials". This work has been incorporated into our Lead Service Replacement Program.										
2014 Financing: Water Reserve Fund										
Balance of approved projects for prior years comparison		300	600							900
Total Life Cycle Renewal		9,996	19,554	22,475	23,562	30,014	25,297	25,932	149,339	306,169

Water
Capital Expenditure Detail
($000's)

Service Grouping: Water **Category: Growth**

	Safe Drinking Water Act Classification	Prior Years	2013	2014	2015	2016	2017	2018	2019 to 2023	Total
*** EW1503 Development Charges Background Study**	MGT	144				60			60	264
Background study to determine future watermain needs to service growth, including timing and growth splits. Growth splits are consistent with the 2009 Development Charge Study. 100% Growth Related (75% DC Rate Supported).										
*** EW3312 Water Distribution System Master Plan**	MGT	155	155					155	155	620
To update the City's Water Distribution System Master Plan to support the calculation of Development Charges. Growth splits are consistent with the 2009 Development Charge Study. 100% Growth Related (83.8% DC Rate Supported).										
EW3551 Hyde Park - Sarnia Road High Level Watermain - Phase II	SD	52	166	1,153	100	872			680	3,023
Construction of 400mm, 450mm and 600mm watermains in the high level area of northwest London. Watermain installation required to service customers in the Hyde Park High Level area. Growth splits are consistent with the 2009 Development Charge Study. 100% Growth Related (100% DC Rate Supported).										
2014 Financing: Development Charges										
EW3590 Uplands Pumping Station Upgrade	SD			28	252					280
To upgrade the Uplands Pumping Station to serve future growth in north London. Growth splits are consistent with the 2009 Development Charge Study. 100% Growth Related (100% DC Rate Supported).										
2014 Financing: Development Charges										

Note: * represents projects that are classified as non-tangible capital assets. These expenditures will not result in the creation of a tangible asset (having physical substance).

Water
Capital Expenditure Detail
($000's)

Service Grouping: Water **Category: Growth**

	Safe Drinking Water Act Classification	Prior Years	2013	2014	2015	2016	2017	2018	2019 to 2023	Total
EW3591 Hyde Park Pumping Station Upgrade	SD			55	495					550
To upgrade the Hyde Park Pumping Station to serve future growth in northwest London. Growth splits are consistent with the 2009 Development Charge Study. 100% Growth Related (100% DC Rate Supported).										
2014 Financing: Development Charges										
EW3595 Hyde Park Road Feeder Watermain	SD		227	2,045						2,272
To construct a 750mm watermain on Hyde Park Road from Sarnia Road to Oxford Street. Watermain installation required for water supply to west London. Coordinated with sewer project ES2493 and transportation project TS1477-1. Growth splits are consistent with the 2009 Development Charge Study. 35% Growth Related (33.8% DC Rate Supported).										

2014 Financing:

Water Reserve Fund	$1,354
Development Charges	691
Total Financing	$2,045

Water
Capital Expenditure Detail
($000's)

Service Grouping: Water — **Category: Growth**

	Safe Drinking Water Act Classification	Prior Years	2013	2014	2015	2016	2017	2018	2019 to 2023	Total
EW3606 Southeast Pressure Zone Feeder Watermain	SD	6,326		325	2,622					9,273
To construct feeder watermains on Bradley Avenue from Jackson Road to Veterans Memorial Parkway to service Airport Road Industrial Subdivision Development Phase II in 2009 and southeast London from the Southeast Pumping Station and Reservoir. Coordinated with industrial land project ID1168 and sewer oversizing project ID2058. Incremental growth in the water distribution system will ultimately lead to increased operating costs. Growth splits are consistent with the 2009 Development Charge Study. 99.2% Growth Related (15.3% DC Rate Supported).										
2014 Financing:										
Industrial Oversizing	$273									
Development Charges	52									
Total Financing	$325									
EW3611 Highbury Avenue South Trunk Watermain	SD			531	4,783					5,314
Construction of a 900mm diameter trunk watermain on Highbury Avenue from the Southeast Reservoir & Pumping Station to Dingman Drive to facilitate industrial growth in southeast London. Growth splits are consistent with the 2009 Development Charge Study. 100% Growth Related (36.9% DC Rate Supported).										
2014 Financing:										
Industrial Oversizing	$324									
Water Reserve Fund	$11									
Development Charges	196									
Total Financing	$531									

Water
Capital Expenditure Detail
($000's)

Service Grouping: Water **Category: Growth**

	Safe Drinking Water Act Classification	Prior Years	2013	2014	2015	2016	2017	2018	2019 to 2023	Total
EW3652-2 Wickerson High Level Watermain Phase II Construction of 400mm and 450mm watermains in the high level area of southwest London. Watermain installation required to service future customers in the River Bend and Wickerson areas. Growth splits are consistent with the 2009 Development Charge Study. 100% Growth Related (100% DC Rate Supported).	SD					117	1,055			1,172
EW3654 Arva Pumping Station Upgrade Upgrades to the Arva Pumping Station, including pump replacements, that are required as water demand increases. Growth splits are consistent with the 2009 Development Charge Study. 50% Growth Related (47.2% DC Rate Supported).	SD								2,600	2,600
EW3666-2 Wonderland Road North Feeder Watermain Phase II To construct a 600mm watermain on Wonderland Road North from Gainsborough Road to Sunningdale Road. Project required to upgrade north London area water supply. Coordinated with transportation projects TS1156 and TS1354. Growth splits are consistent with the 2009 Development Charge Study. 45% Growth Related (43.2% DC Rate Supported).	SD								2,871	2,871

Water
Capital Expenditure Detail
($000's)

Service Grouping: Water **Category: Growth**

	Safe Drinking Water Act Classification	Prior Years	2013	2014	2015	2016	2017	2018	2019 to 2023	Total
EW3692 Medway - Wonderland Road Trunk Watermains	SD			100		897	8,975			9,972
To construct 1,500mm watermains from the Arva Pumping Station to the north London area. Trunk watermain required to supply future customers in north and west London. Growth splits are consistent with the 2009 Development Charge Study. 100% Growth Related (94.6% DC Rate Supported).										
2014 Financing:										
Industrial Oversizing	$4									
Water Reserve Fund	1									
Development Charges	95									
Total Financing	$100									
EW3709 Crumlin & River Feeder Watermain Phase III	SD							267	2,403	2,670
To construct 450mm and 600mm watermains in southeast London to service industrial land in the River Road industrial area. Growth splits are consistent with the 2009 Development Charge Study. 77% Growth Related (33.1% DC Rate Supported).										
EW3711 Gainsborough Road Feeder Watermain	SD								4,630	4,630
To construct a new 600mm watermain on Gainsborough Road between Wonderland Road North and Hyde Park Road for low level grid. Growth splits are consistent with the 2009 Development Charge Study. 100% Growth Related (100% DC Rate Supported).										

Water
Capital Expenditure Detail
($000's)

Service Grouping: Water **Category: Growth**

	Safe Drinking Water Act Classification	Prior Years	2013	2014	2015	2016	2017	2018	2019 to 2023	Total
EW3712 White Oak Road Watermain Upsizing	SD	642					850	1,593		3,085
To construct a new 450mm watermain on White Oak Road between Dingman Drive and Exeter Road to service new development within the 20 year urban growth area. Growth splits are consistent with the 2009 Development Charge Study. 35% Growth Related (8.4% DC Rate Supported).										
*** EW3772-14 Water Efficiency Program**	MGT		350	350	350	350	350	350	1,750	3,850
To undertake a water efficiency strategy to promote awareness of water issues. Water efficiency/conservation program will be a requirement of the new Municipal Water Licensing Plan. 8% Growth Related (6.8% DC Rate Supported).										
2014 Financing:										
Water Reserve Fund $326										
Development Charges 24										
Total Financing $350										
Balance of approved projects for prior years comparison		2,495	1,326							3,821
Total Growth		9,814	2,224	4,587	8,602	2,296	11,230	2,365	15,149	56,267

Note: * represents projects that are classified as non-tangible capital assets. These expenditures will not result in the creation of a tangible asset (having physical substance).

Water
Capital Expenditure Detail
($000's)

Service Grouping: Water **Category: Service Improvement**

	Safe Drinking Water Act Classification	Prior Years	2013	2014	2015	2016	2017	2018	2019 to 2023	Total
EW1630 District Meter Areas New project to develop a City-wide leak detection program that incorporates elements of water modeling, fire hydrant management, and billing audit confirmation to enhance the cost effectiveness of water service delivery. **2014 Financing:** Water Reserve Fund	SD, MON, MGT			500	500	500	500	500		2,500
EW2404 New Vehicles & Equipment Purchase new vehicles to provide for planned growth of the water distribution system. **2014 Financing:** Water Reserve Fund	SD, MGT			130			130		260	520
EW3657 Westmount Area High Level System Distribution Improvements To replace and upsize the existing 200mm and 300mm watermains on Viscount Road (Wonderland Road to Belmont Drive) with 450mm and 600mm watermains. Watermains undersized for peak distribution needs. Identified in the High Level Water Distribution System Master Plan.	SD								2,145	2,145
EW3658 Westmount Pumping Station to Viscount Road High Level Water Reinforcement To replace and upsize the existing 300mm and 400mm watermains on Wonderland Road (Westmount Pumping Station to Viscount Road) with 600mm watermain as identified in the High Level Water Distribution System Master Plan. Watermains undersized for peak distribution.	SD						119	1,070		1,189

Water
Capital Expenditure Detail
($000's)

Service Grouping: Water **Category: Service Improvement**

	Safe Drinking Water Act Classification	Prior Years	2013	2014	2015	2016	2017	2018	2019 to 2023	Total
EW3743 Watermain Extensions Cost sharing project for the watermain extensions to unserviced parts of the urban growth area and beyond. City's share is approximately 25% of the total cost.	SD		840		840		840		840	3,360
EW3806 Local Improvement - White Oak Industrial Subdivision - Water Cost Sharing Phase II Cost sharing project for the installation of watermains in this existing industrial area. Coordinated with sewer project ES3111. City's share is approximately 25% of the total cost.	SD								1,700	1,700
EW3817-14 Watermain Oversizing Costs To accommodate oversizing costs to upsize feeder and distribution watermains.	SD, MGT		50		50	50	50	50	250	500
EW3851-14 New Meters for Development Purchase and installation of new water meters, valves and related equipment. Includes cost of meters for all new development in residential, industrial and institutional sectors.	MGT		330		330	330	330	330	1,650	3,300
Balance of approved projects for prior years comparison		855	1,900							2,755
Total Service Improvement		855	3,120	630	1,720	880	1,969	1,950	6,845	17,969
Total Water		20,665	24,898	27,692	33,884	33,190	38,496	30,247	171,333	380,405

Water

2014 Reserve Funds and Reserves

Water
Reserve Funds and Reserves
($000's)

New Capital Water Reserve Fund (1)	Actual 2012	Projected 2013	Approved 2014	Forecast 2015	2016	2017	2018	2019-2023
Opening Balance	$19,893	$20,201	$8,066	$10,653	$14,892	$13,906	$16,433	$17,205
Contributions from Operating Water Rates	7,195	7,392	9,877	10,857	6,925	10,373	9,814	33,136
Additional Contribution (transfer from Lead Replacement Reserve Fund and account closing)	706							
Interest earned	465	349	232	317	357	376	417	2,119
	$28,259	**$27,942**	**$18,175**	**$21,827**	**$22,174**	**$24,655**	**$26,664**	**$52,460**
Drawdowns - Current Year	1,137	8,746	7,522	6,935	8,268	8,222	9,459	45,065
Drawdowns - Prior Year	6,921	11,130						
Total Drawdowns (2)	**$8,058**	**$19,876**	**7,522**	**$6,935**	**$8,268**	**$8,222**	**$9,45[illegible]**	**$45,065**
Ending Balance (3)	**$20,201**	**$8,066**	**$10,653**	**$14,892**	**$13,906**	**$16,433**	**$17,205**	**$7,395**

Notes:

(1) This reserve fund is intended to support the capital needs of the water system with an estimated replacement value of $2.0 billion.

(2) Drawdowns are based on full capital needs and not intended to project the actual cash flow of funds being utilized in a particular year.

(3) The reserve fund balance may increase/decrease subject to the 2013 year end operating position of the Water operating budget.

Industrial Oversizing Water Reserve Fund	Actual 2012	Projected 2013	Approved 2014	Forecast 2015	2016	2017	2018	2019-2023
Opening Balance	$6,384	$5,910	$4,338	$4,850	$1,255	$1,706	$1,639	$1,638
Contributions from Operating Water Rates			1,000	1,500	500	500	500	2,500
Interest earned	155	127	113	75	37	41	40	230
	$6,539	**$6,037**	**$5,451**	**$6,425**	**$1,792**	**$2,247**	**$2,179**	**$4,368**
Drawdowns - Current Year		50	601	5,170	86	608	541	1,370
Drawdowns - Prior Year	629	1,649						
Total Drawdowns (1)	**$629**	**$1,699**	**$601**	**$5,170**	**$86**	**$608**	**$541**	**$1,370**
Ending Balance	**$5,910**	**$4,338**	**$4,850**	**$1,255**	**$1,706**	**$1,639**	**$1,638**	**$2,998**

Notes:

(1) Drawdowns are based on full capital needs and not intended to project the actual cash flow of funds being utilized in a particular year.

(2) This reserve fund was established to provide funding for the servicing costs in Industrial Developments and oversizing in growth projects.

Water
Reserve Funds and Reserves
($000's)

City Services - Water Levies Reserve Fund	Actual 2012	Projected 2013	Approved 2014	Forecast 2015	2016	2017	2018	2019-2023
Opening Balance	$9,354	$10,847	$8,905	$8,395	$7,082	$6,972	$3,133	$4,663
Levies	1,519	1,486	1,546	1,530	1,554	1,656	1,656	7,975
Interest earned	175	244	214	191	174	125	96	540
	$11,048	**$12,577**	**$10,665**	**$10,116**	**$8,810**	**$8,753**	**$4,885**	**$13,178**
Refunds	6	15						
Forecasted Future Debt								2,024
Drawdowns - Current Year	7	1,087	2,270	3,034	1,838	5,620	222	8,571
Drawdowns - Prior Year	188	2,570						
Total Drawdowns (1)	**$201**	**$3,672**	**$2,270**	**$3,034**	**$1,838**	**$5,620**	**$222**	**$10,595**
Ending Balance	**$10,847**	**$8,905**	**$8,395**	**$7,082**	**$6,972**	**$3,133**	**$4,663**	**$2,583**

Note:

(1) Drawdowns are based on full capital needs and not intended to project the actual cash flow of funds being utilized in a particular year.

Lead Service Replacement Program Reserve Fund (1)	Actual 2012	Projected 2013	Approved 2014	Forecast 2015	2016	2017	2018	2019-2023
Opening Balance	$494	$103	$112	$121	$130	$139	$148	$157
Contributions from Operating Water Rates								
Repayment of Lead Replacement Program	6	6	6	6	6	6	6	15
Interest earned	5	3	3	3	3	3	3	20
	$505	**$112**	**$121**	**$130**	**$139**	**$148**	**$157**	**$192**
Tsf to New Capital Water Reserve Fund	$400							
Loans - Lead Replacement Program	2							
Total Loans	**$402**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**	**$0**
Ending Balance	**$103**	**$112**	**$121**	**$130**	**$139**	**$148**	**$157**	**$192**

Note:

(1) The purpose of this reserve is to provide the funding mechanism for the Lead Service Replacement Loan Program. Program is designed to assist with the private portion of lead service replacement. Repayment will be made over 10 years. The funding requirement is dependant on the number of households who take advantage of this pilot program. Any balance remaining in this reserve fund at the end of the Lead Service Replacement Loan Program will be returned to the New Capital Water Reserve Fund. Administration intends to review the Lead Service Replacement Program Reserve Fund in 2014 to determine if it should be rolled into the New Capital Water Reserve Fund.

Water
Reserve Funds and Reserves
($000's)

Efficiency, Effectiveness and Economy Water Reserve (1)	Actual 2012	Projected 2013	Approved 2014	Forecast 2015	2016	2017	2018	2019-2023
Opening Balance	$224	$428	$498	$498	$498	$498	$498	$498
Contributions	204	70						
	$428	$498	$498	$498	$498	$498	$498	$498
Drawdowns								
Ending Balance	**$428**	**$498**	**$498**	**$498**	**$498**	**$498**	**$498**	**$498**

Note:

(1) Beginning in 2004, all positions with some exceptions, are subject to 90 days savings corporately. The savings from these positions are contributed to Efficiency, Effectiveness and Economy reserves to be used as a one-time funding source for initiatives recommended by the Senior Leadership Team.

Water Customer Assistance Reserve Fund (1)	Actual 2012	Projected 2013	Approved 2014	Forecast 2015	2016	2017	2018	2019-2023
Opening Balance	$0	$0	$0	$5	$13	$25	$41	$60
Contributions from Operating Water Rates			5	8	12	15	18	137
Interest earned						1	1	16
	$0	$0	$5	$13	$25	$41	$60	$213
Drawdowns - Current Year								
Drawdowns - Prior Year								
Ending Balance	**$0**	**$0**	**$5**	**$13**	**$25**	**$41**	**$60**	**$213**

Note:

(1) The Water Customer Assistance Reserve Fund was established in June 2013 to provide a source of funding for the Crisis Support, Crisis Prevention and Customer Assistance programs, as part of the new "value based" funding model for Water and Wastewater approved by Council on December 11, 2012. Residential customers are charged $0.25 per month to fund this program. Any annual surplus of revenues over expenditures for this program is contributed to this Reserve Fund to fund Crisis Support, Crisis Prevention or Customer Assistance initiatives or reduce future monthly Customer Assistance charges.

Water

2014 Debt Summary

Water
Debt Summary - Rate Supported
($ millions)

The Water capital budget forecast for the 2014 - 2023 capital plan does not have any rate supported debt financing, as outlined in the table below.

Rate Supported - Projected Debt Financing	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Capital Projects Funded by Rate - Supported Debentures	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

As at June 30, 2013, the authorized but unissued debt was $1.5 million, with $1 million of debt issued in September 2013. The outstanding debt level projected for the end of 2013 is $2.7 million. The long term financial goal is to continue to fund water system capital works using pay-as-you-go sources as the primary source of funding. For 2014, the annual debt servicing costs will be approximately $0.4 million as outlined in the table below.

Annual Debt Servicing Costs (excluding Joint Boards)	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Rate Supported Principal and Interest Payments [1]	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.2	0.2

(1) Debt servicing costs will be covered by operating revenue generated by water rates.

The Water budget carries debt associated with the City's share of debt issued by the Joint Boards (debt issued for capital works necessary to bring potable water from Lake Huron and Lake Erie to the City system). This will be approximately $16.7 million at the end of 2013. Debt payments tied to the City's share of the Joint Board debt are made indirectly as the part of the purchase of water rate charged to the City by the Joint Boards and is estimated to be approximately $1.4 million in 2014.

Water
Debt Summary - Non Rate Supported
($ millions)

Non rate supported debt in the Water budget is funded through Development Charges (DC), in accordance with the 2009 DC Background Study, rather than water rates. The funding of this debt by the applicable reserve fund is identified in the reserve fund section of the 2014 Water budget.

The Water capital budget forecast includes non rate supported (DC) debt financing of $4.0 million as part of the 2014 - 2023 capital plan as highlighted below.

Projected Debt Financing (Non Rate Supported)	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Capital Projects Funded by Non Rate Supported Debentures	0.0	0.0	0.0	4.0	0.0	0.0	0.0	0.0	0.0	0.0

At June 30, 2013, there is no authorized but unissued debt and no outstanding debt.

Annual Debt Servicing Costs funded through DC's	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Non Rate Supported (DC) Principal and Interest Payments	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5	0.5	0.5

The debt projections above are based on a modest pace of spending against approved capital project budgets and the proposed capital plan, consistent with recent experience. If the pace of spending increases, debt will be issued sooner, and the total debt outstanding along with the annual debt servicing costs could exceed current projections.

Water

2014 Schedule of Rates and Charges

Water
2014 Schedule of Rates and Charges

Effective Date

All 2014 approved rates and charges come into effect on January 1, 2014.

Monthly Rates and Charges

	2013 Approved Rates (effective Jan. 1 - Feb. 28/13)	2013 Revised Rates (effective Mar. 1 - Dec. 31/13)	2014 Approved Rates
Residential			
First 17 m^3	$1.74412/$m^3$		
Next 40 m^3	$1.83335/$m^3$		
All additional m^3	$1.92122/$m^3$		
Minimum monthly charge	$5.40		
Commercial, Institutional, Industrial & Multi Family Residential			
First 3 m^3	$6.67845/$m^3$		
Next 708 m^3	$1.14350/$m^3$		
All additional m^3	$0.94440/$m^3$		
Minimum monthly charge	$5.40		
All Customers			
First 7 m^3		$0.00/$m^3$	$0.00/$m^3$
Next 8 m^3		$1.7304/$m^3$	$1.8688/$m^3$
Next 10 m^3		$2.2248/$m^3$	$2.4028/$m^3$
Next 10 m^3		$2.4720/$m^3$	$2.6698/$m^3$
Next 215 m^3		$0.9394/$m^3$	$1.0146/$m^3$
Next 6,750 m^3		$0.8899/$m^3$	$0.9611/$m^3$
Next 43,000 m^3		$0.8109/$m^3$	$0.8758/$m^3$
Over 50,000 m^3		$0.7219/$m^3$	$0.7797/$m^3$

Water
2014 Schedule of Rates and Charges (cont'd)

	2013 Approved Rates (effective Jan. 1 - Feb. 28/13)	2013 Revised Rates (effective Mar. 1 - Dec. 31/13)	2014 Approved Rates
Water Meters / Water Infrastructure Charge			
Meter Size	Monthly Rate	Monthly Rate	Monthly Rate
16 mm	$0.69	$12.15	$13.12
19 mm	$0.76	$18.22	$19.68
25 mm	$6.02	$30.37	$32.80
40 mm	$11.75	$60.75	$65.61
50 mm	$15.75	$97.20	$104.98
76 mm	$39.27	$212.61	$229.62
100 mm	$57.83	$364.48	$393.64
150 mm	$97.64	$850.46	$918.50
200 mm	$150.69	$1,457.92	$1,574.55
250 mm	$190.00	$1,822.50	$1,968.30
Monthly Fire Protection Charge		Monthly Rate	Monthly Rate
Low-density Residential		$1.25	$1.35
Institutional, Commercial, Industrial, Medium-density Residential, High Rise under 5.0 hectares		$8.33	$9.00
Institutional, Commercial, Industrial, Medium-density Residential, High Rise 5.0 hectares and over		$41.67	$45.00
Low Income Crisis Support, Crisis Prevention, and Customer Assistance Charge		Monthly Rate	Monthly Rate
Residential		$0.25	$0.25

Water
2014 Schedule of Rates and Charges (cont'd)

	2013 Approved Rates (effective Jan. 1 - Feb. 28/13)	2013 Revised Rates (effective Mar. 1 - Dec. 31/13)	2014 Approved Rates
Miscellaneous Rates and Charges			
Non-payment of account			
Late payment charge	As set by London Hydro	As set by London Hydro	As set by London Hydro
NSF cheques	As set by London Hydro	As set by London Hydro	As set by London Hydro
Collection charges	As set by London Hydro	As set by London Hydro	As set by London Hydro
Disconnection of service			
During regular hours	$31.81	$31.81	$35.00*
After regular hours	$50.17	$50.17	$185.00*
Change of occupancy/Account set-up fee	As set by London Hydro	As set by London Hydro	As set by London Hydro
Arrears certificate charges (non-payment/arrears)	$50.00 per property	$50.00 per property	$50.00 per property
Disconnect and reconnect meter at customer request			
16 and 19 mm	$63.95	$159.88	$172.67
25 mm and larger	$108.85	$272.13	$293.90
Install water meter and remote read-out unit at customer request	$244.94	$244.94	$264.54
Repair damaged meter			
16 and 19 mm	$168.38	$168.38	$181.85
25 mm and larger	Time and material	Time and material	Time and material
Inspecting waterworks installations/disconnections	$96.94 per hour	$96.94 per hour	$104.70 per hour

* Updated to reflect charges established by London Hydro.

Water
2014 Schedule of Rates and Charges (cont'd)

	2013 Approved Rates (effective Jan. 1 - Feb. 28/13)	2013 Revised Rates (effective Mar. 1 - Dec. 31/13)	2014 Approved Rates
Meter checked for accuracy at customer's request and found to be accurate			
16 and 19 mm	$125.85	$125.85	$135.92
25 mm and larger	$170.07	$170.07	$183.68
Watermain Tapping Charges			
Tap size of 50 mm or less	$270.00	$270.00	$291.60
Tap size of greater than 50 mm	$540.00	$540.00	$583.20
Tapping concrete mains or tap size of greater than 300 mm	$1,620.00	$1,620.00	$1,749.60
Water Rate for Temporary Connection for Construction			
Single family structure	$14.02	$45.00	$48.60
Duplex structure one service line	$14.02	$45.00	$48.60
Up to 4 units	$17.52	$56.23	$60.73
5 to 10 units	$26.27	$84.31	$91.05
11 to 15 units	$35.02	$112.43	$121.42
16 to 20 units	$43.79	$140.58	$151.83
21 to 25 units	$52.73	$169.25	$182.79
26 to 30 units	$61.29	$196.74	$212.48
31 to 35 units	$70.08	$224.97	$242.97
36 to 40 units	$78.84	$253.08	$273.33
41 to 50 units	$87.59	$281.16	$303.65
Over 50 units	$1.77 per unit	$5.69 per unit	$6.15 per unit
Other structures per 93 m^2 of floor space	$3.56 (minimum charge $8.91)	$11.44 (minimum charge $28.60)	$12.36 (minimum charge $30.89)

Water
2014 Schedule of Rates and Charges (cont'd)

	2013 Approved Rates	2013 Revised Rates	2014 Approved Rates
Bulk Water Users			
Smart Card (per card purchase cost)	$34.99	$34.99	$37.79
Cost of Water per 1,000 L	$2.89	$2.89	$3.12
Builder and Developer Charges			
Based on actual frontage which directly abuts City right-of-way			
Residential (maximum 50 meters)	$175.77 per meter	$175.77 per meter	$189.83 per meter
Commercial, Industrial and Institutional	$186.94 per meter	$186.94 per meter	$201.90 per meter
Illegal Hydrant Connection Charge		$500.00/offence + water consumption	$540.00/offence + water consumption
Temporary Hydrant Connection			
Hydrant connection/disconnection		$185.00	$199.80
Hydrant occupancy		$35.00/week	$37.80/week
Water consumption:			
Minimum charge (up to 300m^3)		$800.00	$864.00
All additional m^3		$2.68/m^3$	$2.89/m^3$

Water

Appendix A -

2014 Business Cases

2014 Service Change Case

Service	Drinking Water Supply
Initiative	Integrated approach to regulatory compliance, growth, efficiency and best management practices, with sustainability being a common theme in all areas

Financial Implications ($ 000)

	Change to Gross Expenditure	Change to Water Revenue	Net Change to Water Budget	2014 Budget Impact %	Incremental Net Change Future Years $ (if applicable)			
					2015	2016	2017	2018
Capital Budget Impact	$500	$0	$500	1.8%	$0	$0	$0	$0
Operating Budget Impact	$133	$0	$133	0.2%	($190)	($190)	($190)	($190)
Staffing Implications								
# of FT / FTEs impacted	3 additional FTE's							

Background

Several of the 2014 initiatives described in the Water Business Plan are linked together by resources, and in most cases are co-dependent to allow successful implementation at the lowest cost. Together they assist the Corporation in achieving its Strategic Plan in the areas of: providing growth-related infrastructure to support a strong local economy; ensuring environmental controls are in place for a green and growing City; ensuring infrastructure is at a reasonable condition level and funded for long term sustainability and; a water utility that assists its customers when unforeseen challenges occur. Overall objectives remain same: protecting public health and private property; meeting all regulatory requirements; ensuring the Standard of Care provision is met; supporting Council's objectives of economic development and growth; gaining efficiencies to reduce long term costs; investing in succession planning; harnessing innovative technologies; and maintaining a high level of service to consistently meet customers' expectations.

The net result of all the proposed changes in this Business Case, and other changing cost factors, is included in an Operating Budget increase of 0.7%.

2014 Service Change Case

Service	Drinking Water Supply
Initiative	Integrated approach to regulatory compliance, growth, efficiency and best management practices, with sustainability being a common theme in all areas

Inherent in the 2014 Budget are continuing and new efforts to meet new regulatory requirements under the Safe Drinking Water Act, Fire Code, Water Opportunities (and Conservation) Act, Clean Water Act (Source Water Protection Plans), and Green Energy Act (Electrical Efficiency). Specifically:

- A plan to address a Fire Code Order to classify hydrants based on their flow capabilities, and to maintain this in the future
- Increased effort (resource allocation) on valve maintenance through existing resource re-allocation
- An acceleration of the air/vacuum valve program (initiated in 2013 under an MOE Order) through existing resource re-allocation
- Improving Drinking Water Quality Compliance through the use of a new Environmental Management resource
- Meeting a new requirement for Source Water Protection with contracted services
- Initiating a District Metering Area program to reduce non-revenue water
- Supporting all of the activities with mission critical Engineering resources dedicated to using the well-developed water system computer model

Attached to this Business Plan are Parts A through D that provide more specific details and demonstrate how they are interrelated.

Part A – Drinking Water Quality Management System
Part B – Source Water Protection Plan
Part C – Reduction in Non-revenue Water Utilizing District Metered Areas
Part D – Mission Critical Resources

Alternative approaches to each initiative were considered. These are described in Parts A through D. Generally speaking, two strategies were considered:

1. Address each initiative in isolation with additional resource allocations; and,
2. Address all in an integrated fashion.

2014 Service Change Case

Service	Drinking Water Supply
Initiative	Integrated approach to regulatory compliance, growth, efficiency and best management practices, with sustainability being a common theme in all areas

An integrated approach was found to require far fewer additional licensed operating resources. In this approach, licensed operators required for the fire hydrant, A/V valves and shut off valve initiatives are re-purposed from programs that do not require licensed operators. All programs are supported by two technical resources that will use the network computer model to reduce the scope, impacts and ongoing maintenance efforts associated with these programs.

As the City's Licenced Operating Authority, compliance with regulatory requirements is imperative to successfully fulfilling our mandate of operating a fully accredited drinking water supply system. Ensuring that tasks are undertaken properly by qualified operators, documented accordingly, and having met stipulated requirements are paramount. The Ministry of the Environment undertakes annual inspections of London's water supply system, and provides directives whereby actions are necessary for compliance. The London Fire Department also has a vested interest in the ability of the City's water supply system to function in a manner which fulfills their mandate, therefore requiring the system to meet the obligations of the Fire Code.

Recently, staff reported to Council that the Ministry of the Environment had issued an Order to comply with the need to develop and implement a program for the operational and maintenance activities on the (approx.) 250 air/vacuum chambers in the distribution system. This program will be reviewed annually as part of the MOE's inspection. Water Operations has advanced a program for eliminating and/or substantively reducing the risk of drinking water contamination in all flooded air and vacuum valve chambers within the distribution system. Through staff's initial investigation, documentation, and undertaking of immediate remedial activities, it is evident that the level of effort required to sustain the program requires enhancement to ensure that compliance with the Safe Drinking Water Act is achieved.

According to the Fire Code, visual flow identification/colour coding of fire hydrants is required. Since the system is owned and maintained by the Water utility, a program has been developed which utilizes the City's computerized hydraulic model to provide an estimation of the flow capacity at each of the (approx.) 8,500 hydrants served by the system. In order to ensure the accuracy of the model, calibration and validation of flow delivery is necessary through a significant increase in field testing of hydrants by staff appropriately certified to undertake this activity.

In order to ensure that the system continues to perform optimally and supports operational/maintenance and emergency activities, undertaking additional efforts in control valve maintenance will meet best practice objectives. When coupled with the implementation of the computerized maintenance management system, development of a thorough program for control valve

2014 Service Change Case

Service	Drinking Water Supply
Initiative	Integrated approach to regulatory compliance, growth, efficiency and best management practices, with sustainability being a common theme in all areas

maintenance will ensure operational reliability, reduce customer impacts, and reduce staffing costs for emergency repairs of watermain breaks.

As the City's Licenced Operating Authority, external inspections and investigations cannot be relied upon to dictate whether compliance with legislative requirements is achieved and that best practices are employed. Delivery of effective, proactive programs and proper documentation of activities will provide evidence that compliance has been achieved.

Performance Measures Impact

Lead services replaced – meet targets
Water meters installed – meet targets
Average cost for residential customer – meet targets
Non-revenue water (% of water pumped) – meet or exceed targets
boil water advisories – meet target of zero
watermain breaks per 100 km – meet or exceed targets
of customers with a service interruption of more than 2 hrs – meet or exceed targets

2014 Service Change Case

Service	Drinking Water Supply
Initiative	Integrated approach to regulatory compliance, growth, efficiency and best management practices, with sustainability being a common theme in all areas

Impacts

a) Community
The community confidence in drinking water quality and adequate supply for fire-fighting purposes will be enhanced. The use of experienced, certified Waterworks operators in a more maintenance-focused cache of programs will ensure that the City meets its regulatory requirements, in terms of safe drinking water and fire flow. Rigorous processes and proper documentation of daily activities will ensure demonstrated compliance, all in accordance with the methods and requirements inherent in our Drinking Water Works Permit and Operational Plan, thus fulfilling these obligations as the City's Licenced Operating Authority.

Also see Parts A through D.

b) Community Engagement
None. These are regulated issues.

Also see Parts A through D.

c) Other City of London Services
See Parts A through D.

Risks

It is imperative that the City's Licenced Operating Authority endeavour to ensure that the water distribution system fully complies with legislated requirements and meets the standard of care expected of a water utility; otherwise, the Ministry of the Environment and other regulatory bodies would identify violations, levy penalties and fines, and possibly revoke the City's Drinking Water Works Permit and Certificate of Accreditation.

2014 Service Change Case

Service	Drinking Water Supply
Initiative	Integrated approach to regulatory compliance, growth, efficiency and best management practices, with sustainability being a common theme in all areas

Risks associated with not addressing the noted issues:

- Fulfills requirements under which the City has received Orders at a lower cost. Averts more Orders / charges for not complying.
- Provides due diligence on regulatory compliance and licensing requirements. Not meeting licensing requirements 100% of the time is not a desired outcome from a public perception perspective. See Part A.
- Allows for new legislated requirements to be met while fulfilling our Standard of Care. Averts non-compliance, facing penalties/fines. Maintains accreditation as the Licenced Operating Authority. See Part B.
- Reduces water purchase costs and minimizes damage by averting catastrophic failures and addressing leakage from the City's pipe system, while still supplying customers with their needs and conserving water to provide for future City growth. See Part C.
- Supports the reduction to all the above risks with mission critical resources, without which the proposed solutions will cost more and be at risk of success themselves. See Part D.

Risks associated with the proposed approach to initiatives:

- Timeliness of making changes to meet Order expectations to be mitigated with an implementation plan.

2014 Service Change Case

Service	Drinking Water Supply
Initiative	Part A – Drinking Water Quality Management System (DWQMS)

Financial Implications ($ 000)

	Change to Gross Expenditure	Change to Water Revenue	Net Change to Water Budget	2014 Budget Impact %	Incremental Net Change Future Years $ (if applicable)			
					2015	2016	2017	2018
Capital Budget Impact	$0	$0	$0	0%	$0	$0	$0	$0
Operating Budget Impact	$71	$0	$71	0.1%	$0	$0	$0	$0
Staffing Implications								
# of FT / FTEs impacted	1.0 additional FTE's							

Background

Regulatory compliance requires DWQMS monitoring, audits, and reporting. With the City's full accreditation as a Licenced Operating Authority, the legislation requires considerable additional effort to fulfill the requirements of the DWQMS. The London Water System QMS Operational Plan provides more detail and insights for this topic.

Continuous improvement in operations cannot rely on external inspections and investigations. A management system should align policies and procedures to be consistent with specified standards, legislative requirements and best practices. This proposed new position undertakes internal audits (as opposed to inspections) to identify areas where the policies and procedures need to be improved to better align with standards and legislated requirements (say what you do), and provide evidence that the activities follow stated policy and procedures (do what you say). Identified opportunities for improvement can be changes in policies and procedures, identification of training gaps, recommendations for resource allocations, or alternative practices.

2014 Service Change Case

Service	Drinking Water Supply
Initiative	Part A – Drinking Water Quality Management System (DWQMS)

In addition to audit functions, the position is also involved in developing and implementing plans to improve "system" performance as a result of the internal audit or other opportunities identified from various processes. Improvement may come in the form of operational improvements and potential savings, risk reduction efforts, improved services and service levels, etc.

The position will report to the City's designated Drinking Water Quality Management System Representative.

Performance Measures Impact

Number of Boil Water Advisories – meet target of 0
MOE Report Card Score – meet target of 100%

The addition of this staff resource will ensure regulatory requirements are met in several areas: full engagement of staff within their responsibilities under the Operational Plan, reduction in risks to the safety of drinking water, improved scores on MOE inspections through more rigorous documentation, and resilience and agility to respond to events which require immediate attention without compromising other day-to-day operations.

2014 Service Change Case

Service	Drinking Water Supply
Initiative	Part A – Drinking Water Quality Management System (DWQMS)

Impacts

a) Community
The community confidence in drinking water quality can be expected to rise with better audit scores. The use of Environmental Management techniques and specific resources used for this purpose has been implemented by the Water Boards. Not only is it a requirement to meet safe drinking water parameters, but it must also be proven through rigorous processes on a daily, monthly and annual basis. A focus on the methods and requirements for this are also inherent in our Licence and Operating Plan.

b) Community Engagement
None. This is a regulated issue.

c) Other City of London Services
None.

Risks

Risks associated with not addressing this issue:
If additional specific resources are not applied there is a greater likelihood that London's Water Quality Management System will fall out of compliance by not providing the standard of care expected of a water utility. Due diligence is not just expected, but directed by applicable legislation. London has been scoring less than the targeted 100% compliance rate expected from audit results.

Risks associated with the proposed approach to initiatives:
There is always the risk of non-compliance due to system or individual failures. The proposed approach specifically works to reduce these.

2014 Service Change Case

Service	Drinking Water Supply
Initiative	Part B – Source Water Protection Plan Implementation

Financial Implications ($ 000)								
	Change to Gross Expenditure	Change to Water Revenue	Net Change to Water Budget	2014 Budget Impact %	Incremental Net Change Future Years $ (if applicable)			
					2015	2016	2017	2018
Capital Budget Impact	$0	$0	$0	0%	$0	$0	$0	$0
Operating Budget Impact	$50	$0	$50	0.1%	$0	$0	$0	$0
Staffing Implications								
# of FT / FTEs impacted								

Background

The Source Water Protection Plan is a new legislated requirement under the Clean Water Act and relates to Wellhead Protection Areas within the City of London. The legislation requires a Risk Management Officer (RMO) and/or Risk Management Inspector (RMI) to develop and review plan requirements with land owners at the Fanshawe and Hyde Park Wells to ensure risk management efforts are implemented and effective in protecting source groundwater. Wells are used as standby in the event of a catastrophic loss of supply from the lake sources. Once the Southeast Reservoir is operational, consideration will be given to phasing out the standby wells, thereby becoming exempt from this requirement. Until that time, the City must comply with the legislation and plan requirements which will come into effect in 2014.

Performance Measures Impact

Designating a Risk Management Officer and/or Risk Management Inspector is a mandatory requirement.

The contract service supported by staff will ensure regulatory requirements are met in several areas: reduction in risk to the safety of the water and groundwater resources, as well as improved scores on MOE inspections.

2014 Service Change Case

Service	Drinking Water Supply
Initiative	Part B – Source Water Protection Plan Implementation

Impacts

a) Community

Landowner may be constrained in existing and future activities on their property that lie within well head protection areas. Generally a negotiated risk management approach will be used to reduce the risk of groundwater contamination to an acceptable level. It is unlikely that existing activities will be prohibited; but future development of the property may be limited by way of zoning limitations.

b) Community Engagement

Two formal sessions were hosted by Conservation Authorities and the Source Water Protection Committee.

c) Other City of London Services

Further involvement of Planning and Building Control may be required depending on the nature of current and future groundwater threats on the properties.

2014 Service Change Case

Service	Drinking Water Supply
Initiative	Part B – Source Water Protection Plan Implementation

Risks

Risks associated with not addressing the noted issue:
Fulfills legislated requirement. Failure to exert risk management controls may result in non-compliance with provincial legislation, groundwater contamination and risk to public health if wells are used.

Risks associated with the proposed approach to the initiative:
Potential for rising costs will be mitigated with a multi-year service contract. This will allow time to consider decommissioning existing wells, which would relieve London from the requirements of the Regulation.

2014 Service Change Case

Service	Drinking Water Supply
Initiative	Part C – Reduction in Non-Revenue Water Utilizing District Metered Areas (EW1630)

Financial Implications ($ 000)								
	Change to Gross Expenditure	Change to Water Revenue	Net Change to Water Budget	2014 Budget Impact %	Incremental Net Change Future Years $ (if applicable)			
					2015	2016	2017	2018
Capital Budget Impact	$500	$0	$500	1.8%	$0	$0	$0	$0
Operating Budget Impact	($190)	$0	($190)	(0.3%)	($190)	($190)	($190)	($190)
Staffing Implications								
# of FT / FTEs impacted								

Background

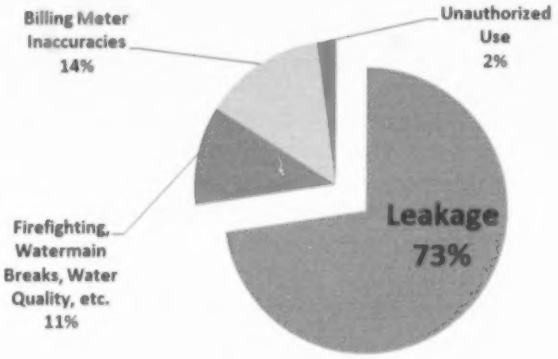
Non-revenue (NRW) water is tracked by municipalities all over the world and is the difference between the amount of water pumped into the system and the amount sold. Since 2009, the City's non-revenue water has increased by 1 million cubic meters or just over 2%. NRW does not go through a customer's water meter, and therefore does not generate revenue. NRW results from leakage, theft, firefighting, construction water, watermain breaks, and water quality maintenance activities. It is normal to have a certain amount to be unaccounted for in the normal operation of a municipal drinking water system, and even though London's NRW is increasing, we are still below the average NRW in Ontario and Canada which is around 15%.

During the period between 2006 and 2008, NRW was stable around 7.5%. Since 2009, London's NRW value has increased by just over 2.0% and as the cost to purchase water from the Elgin Area and Lake Huron Primary Supply Systems increase, the cost of not dealing with NRW will also increase.

2006	2007	2008	2009	2010	2011	2012
7.4%	7.7%	7.4%	9.0%	10.2%	10.8%	11.2%

2014 Service Change Case

Service	Drinking Water Supply
Initiative	Part C – Reduction in Non-Revenue Water Utilizing District Metered Areas (EW1630)



The reduction of NRW provides an opportunity to reduce expenditures for the water system, although it is not financially viable or practical to attempt to reduce NRW to zero. Best practices indicate that considerable savings can be achieved with the installation of properly designed district metered areas (DMA) throughout the City. These DMA's divide the city into sections where the pressures and the volume of water that enters the area are checked against the volume of water billed. When a significant difference occurs, targeted leak detection activities are undertaken to find the leaks that may be causing the difference. The leaks are then quickly repaired and the NRW is decreased in that area.

A pilot project was undertaken in 2011/2012 installing 5 DMAs across the City using various consultants and a contractor to help manage the installation and technical measurement of the leakage. In order to complete the project, the pilot areas must be re-measured following the repairs of all the found leaks. City staff has undertaken the design and prioritization of a system wide plan using the same consultant that helped design the pilot. Using the completed plan, City staff will then install, manage, and operate all of the DMA's and begin to reduce the annual non-revenue water number. Contractors can supplement the work if necessary, but the program will be managed and operated by existing Water staff.

The financial benefit of the program over its 5 year staged implementation period is shown below. It should be noted that in the "do nothing" scenario, continued leakage (unmitigated) results in ever rising costs beyond 2018. The capital investment pays for itself within the implementation period relative to ignoring the problem. The analysis is conservative because of the ongoing nature of the water loss costs (accumulates indefinitely), and the use in the analysis of the lower wholesale cost instead of the higher sale price for water.

2014 Service Change Case

Service	Drinking Water Supply
Initiative	Part C – Reduction in Non-Revenue Water Utilizing District Metered Areas (EW1630)

NRW Leakage Forecast Scenarios

Year	Do Nothing		With DMA		Improvement over Do Nothing
	m3	$	m3	$	
2014	3,937,858	$ 1,772,036	3,516,958	$ 1,582,631	$ 189,405
2015	3,937,858	$ 1,850,793	3,096,057	$ 1,455,147	$ 395,646
2016	3,937,858	$ 1,929,550	2,675,157	$ 1,310,827	$ 618,724
2017	3,937,858	$ 1,929,550	2,254,256	$ 1,104,585	$ 824,965
2018	3,937,858	$ 1,929,550	1,833,356	$ 898,344	$ 1,031,206
Total	19,689,290	$ 9,411,481	13,375,783	$ 6,351,534	$ 3,059,946

This program will contribute directly to Council's strategic direction for **sustainable infrastructure** and a **strong economy** by keeping unaccounted for water at "best in class" level, which results in lower water rates for our customers. The 2014 Budget and Forecasts include reductions in non-revenue water due to this program.

Pertinent Reports:

ETC Agenda Item #14; July 19, 2010 - Update to Water Efficiency Program

CWC Agenda Item #2; September 23 – Water Efficiency Program: Leak Detection Through District Metered Areas EW3772-13

2014 Service Change Case

Service	Drinking Water Supply
Initiative	Part C – Reduction in Non-Revenue Water Utilizing District Metered Areas (EW1630)

As discussed above, the cost is increasing annually with London currently spending $800,000 on unaccounted water that is classified as real leakage. The proposed program is anticipated to have a 4 year payback on the capital investment and will result in various service improvements and efficiencies with its successful implementation. Over the next few years, it is anticipated that NRW can be reduced to pre-2009 levels which will reduce annual purchase of water costs and help keep water rates at affordable levels.

Performance Measures Impact

The program is focused on the reduction of non-revenue water which is a key performance indicator in the efficiency of the water distribution network. As discussed above, NRW is a composite of different unmetered water use activities and best practices suggest that the reduction of leakage is the most economical and practical element to target. Watermain breaks and quality issues in London are dealt with through daily operations and through the capital replacement program where watermains are replaced or rehabilitated based on data collected on their performance.

The implementation of a City-wide DMA program has the potential to reduce various KPI's and increase the efficiency of pumped vs. billed water. Some specific measures are:

Average cost per residential customer – lower purchased water volume will lead to lower future water rates for our customers
Non-Revenue Water (% of water pumped) – meet or exceed projections
Watermain breaks – reduce by finding and repairing leaks in the distribution system before they become main breaks
Number of customers without service – reduced main breaks will equate to fewer customers experiencing outages

2014 Service Change Case

Service	Drinking Water Supply
Initiative	Part C – Reduction in Non-Revenue Water Utilizing District Metered Areas (EW1630)

Impacts

a) Community

District Meter Areas are an industry best practice which is recognized as a very cost effective way of creating value using existing staff and infrastructure.

Further benefits are achieved with the ability to pinpoint leaks and repair them before watermain breaks occur which reduces the need for full infrastructure replacement. The social value of DMA's is very high with very little digging required and much of the work completed at night when most residents are asleep and not using water.

b) Community Engagement

Over the past 12 months, the Water and Wastewater service areas have undertaken extensive education and awareness campaigns related to the monthly cost of our consumer's bills. Much of the work was in support of the new rate structure which changed the way the City bills for these services. As part of the lead up to implementation of the rate structure a series of public engagement meetings were held where the management, funding, and operation of the Water and Wastewater systems were the focus. While district meter areas were not specifically discussed in detail, there was significant discussion in the focus groups on the efficiency of management and how they run the systems. Finding ways to reduce cost so that water bills can be kept at affordable levels is a main goal for the City and using leakage management systems like DMA's add value to an already well run system.

c) Other City of London Services

There are additional benefits that can be achieved on top of simply finding and repairing leaks. By taking advantage of existing technology the data produced by the DMA infrastructure can be read and calibrated using a combination of automated and manual work. Incorporating the system into pre-existing meter reading, hydraulic model, and the upcoming computerized maintenance management system technology will add further value of being able to conduct desktop analysis with minimal

Service	Drinking Water Supply
Initiative	Part C – Reduction in Non-Revenue Water Utilizing District Metered Areas (EW1630)

staff time spent in the field.

Wastewater will receive a benefit as they can begin to measure flows in and out of areas to find incidents of excessive inflow and infiltration.

Part of the design of a DMA requires the testing of fire hydrants to ensure they deliver enough flow when the DMA is being operated. This data can be used to offset the testing and marking of fire hydrants required by the Fire Department.

The Regional Water Supply (RWS) will also benefit from reduced water treated and pumped into the City which saves on electricity, chemicals, and wear and tear on existing infrastructure.

Reduced leakage makes available water for future growth of the City at essentially zero additional cost.

Risks

Risks associated with not addressing this issue:
A few potential risks of not implementing the DMA's are increased NRW which will result in higher purchase of water costs with no additional billed revenue, higher numbers of watermain breaks as leaks cause ruptures over time, potential for leakage into residents' basements along the water service, less nimble hydraulic water model that requires calibration as opposed to regular inputs of field data, additional electricity costs from pumping extra water which leaks away.

Risks associated with the proposed approach to initiatives:
A potential risk involves the reduction of flexibility of the distribution system while the DMA's are being run. This can be mitigated with careful planning to ensure that the DMA being run is well communicated with appropriate Water and Fire Services staff.

2014 Service Change Case

Service	Drinking Water Supply
Initiative	Part D – Staffing to Support Hydraulic and Water Quality Model

Financial Implications ($ 000)								
	Change to Gross Expenditure	Change to Water Revenue	Net Change to Water Budget	2014 Budget Impact %	Incremental Net Change Future Years $ (if applicable)			
					2015	2016	2017	2018
Capital Budget Impact	$0	$0	$0	0%	$0	$0	$0	$0
Operating Budget Impact	$202	$0	$202	0.3%	$0	$0	$0	$0
Staffing Implications								
# of FT / FTEs impacted	2.0 additional FTE's							

Background

The hydraulic and water quality model is critical in several of the initiatives required to meet our compliance obligations (e.g. hydrant colour coding, chlorine residual monitoring), to support economic development by modelling industrial and residential servicing needs, to promote best practices (e.g. pressure management, condition assessment), to support major maintenance activities that could affect water pressure and quality, and to find cost savings by reducing leakage and reducing energy required for pumping.

Over the last several years Water has spent in excess of $100,000 per year on Consultants developing the City's hydraulic model and undertaking planning, design and operational scenarios on our behalf. The City, as the designated operating authority, should take ownership and responsibility for this tool to make it available every day. The use of a consultant delays response times by months due to quantifying specific modelling needs, issuing Purchase Orders, feeding information to the firm, and later reviewing results. Such delays are significantly limiting the valuable use of the model, and costing us premium hourly rates. Other Parts of this Business Case rely on greater use of the model, and will need results in a timely fashion.

Calibration of the model needs to be done annually instead of every 5 years as is the current practice in order to use the model for day-to-day operational benefit, instead of simply as a planning tool. Full-time City staff would be utilized to manage, maintain and

Service	Drinking Water Supply
Initiative	Part D – Staffing to Support Hydraulic and Water Quality Model

operate the model, including an Environmental Services Engineer and a Senior Technologist.

Within the Water Engineering Division, which is responsible for the hydraulic model, there is currently one Environmental Services Engineer who manages the Capital Renewal Program, signs-off on renewal project design forms for MOE, reviews development applications, liaises with Development Services staff and developers, oversees consultant activities related to the growth master plan, Development Charges, design specifications, all distribution system planning and design activities including pumping station upgrades and re-zoning of pressure systems, design manual and policy development. In other engineering divisions, these duties are split between two or more engineers to more effectively manage workload, meet deadlines, provide redundancy and long term succession planning. Taking on other duties to support Operations staff for compliance related activities, investigate best management practices, implement new asset management plans, investigate cost savings opportunities, establish new policies or determine the efficacy of our current programs is not possible with just one Engineer.

It is intended to utilize a Technologist to undertake the majority of the actual modelling and maintenance of the model under supervision of the Engineer, thereby becoming an expert modeller while still continuing with some existing duties where synergies can be achieved. Other duties of Water Technologists include: development application reviews, utilities coordination, product approval, design specifications and design of infrastructure projects (in-house and contracted out), as well as supporting long term succession planning. A projection of duties is provided below:

1. One Environmental Services Engineer –
    a. 15% of their time would be devoted to managing the model, assisting with SCADA calibration of the model
    b. 10% of their time would be devoted to managing the DMA's
    c. 10% of their time would be devoted to managing the large diameter trunk watermain condition assessment program including the Acoustic Fibre Optic monitoring system
    d. 15% of their time would be devoted to overseeing the hydrant colour coding program and model calibration utilizing the hydrant flow data
    e. 20% of their time would be devoted to managing modelling for industrial and residential growth scenarios
    f. 20% of their time would be devoted to managing modelling for capital renewal projects
    g. 10% of their time would be devoted to operational scenarios to support maintenance activities

2014 Service Change Case

Service	Drinking Water Supply
Initiative	Part D – Staffing to Support Hydraulic and Water Quality Model

2. One Technologist –
    a. 70% of their time would be devoted to maintaining and operating the model
    b. 30% of their time would be devoted to reviewing developer submitted, growth related modelling studies for capacity and water quality

Computer modelling is a mission critical service for all programs noted in this Business Case. The two technical resources will use the network computer model to reduce the scope, impacts and ongoing maintenance efforts associated with maintenance programs. For example, instead of individual, hands–on testing by certified staff, the computer model can estimate hydrant flow rates for colour coding, with staff only needed to check extraneous situations and to calibrate it. This is not a one-time activity; the colour coding must be maintained and checked on an ongoing basis. Similarly, the model will be used to: reduce the scope of A/V maintenance by eliminating them where not needed; identify water quality and pressure impacts due to necessary valve maintenance activities; reduce operating costs (energy) through pump performance analyses; and, set up and manage District Meter Areas to recover leakage. These will all be ongoing activities for the model to support in addition to growth projections and capital projects.

Performance Measures Impact

Reduction in non-revenue water.
Stabilization of watermain breaks at or near "best in class", even as infrastructure continues to age.
Ensuring infrastructure sustainability of the water utility by renewing infrastructure at an appropriate pace.
Reduce kilowatts per hour per megalitre of water pumped.
Increase fire protection system target design ratio, i.e. ratio of hydrants meeting design criteria.

2014 Service Change Case

Service	Drinking Water Supply
Initiative	Part D – Staffing to Support Hydraulic and Water Quality Model

Impacts

a) Community

The model has been and can be used in numerous situations to assist our customers in ensuring they have adequate flow and pressure for their personal or business needs, including fire protection. The continual use of the model for day-to-day activities will provide a higher level of service to our customers while lowering costs to ensure the utility is affordable and sustainable – financially and physically.

b) Community Engagement

The hydraulic model has typically been in background growth management studies for Development Charges which has been a public process every 5 years. The model on its own is not typically something that is accessible or demonstrated to the general public.

c) Other City of London Services

Utilization of the model and greater availability of staff will support processing of development services applications (Development Services), ensure our fire protection system is up to standard (Fire Department), and partner with other City engineering divisions to cost effectively renew the City's infrastructure (Wastewater and Transportation).

Risks

Risks associated with not addressing the noted issue:

- A potential risk exists in not meeting City design criteria for water supply (pressure, flow and chlorine residual) if the model is not readily available for use or is not adequately updated and calibrated, thereby placing the City out of compliance for current government regulations.
- Overloading of staff with the consequence of errors or not being able to respond to inquiries or development/growth applications in an appropriate period of time.

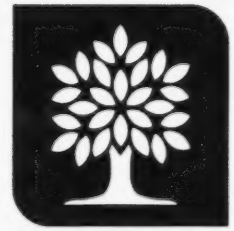
2014 Service Change Case

Service	Drinking Water Supply
Initiative	Part D – Staffing to Support Hydraulic and Water Quality Model

- Missed opportunities to realize cost savings (through efficiency analyses) and employ best practices.
- Pressure and water quality anomalies due to major maintenance activities not evaluated beforehand.
- Not meeting present Orders in a timely or cost effective manner – the integrated approach relies on modelling to reduce the level of field effort and direct efficient use of existing resources.

Risks associated with the proposed approach to the initiative:

- Mistakes in the use of the model are possible, but would be mitigated with training and experience.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